The Ontario Economy 1982-1995

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Peter Dungan
Douglas Crocker
Gay M. Garesché

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Foreword

This book presents two complete long-term projections for the Canadian and Ontario economies. The first projection (Volume 1) extends through 1990 and was originally developed in early 1982 by Peter Dungan and Douglas Crocker. It should now be considered an 'optimistic' alternative. The second (Volume 2) extends through 1995 and was produced in September 1982 by Peter Dungan and Gay Garesché. It should be considered an average or 'normal' projection, perhaps even slightly pessimistic in the longer term. In addition, the book features an examination of the sensitivity of the economy to several policy alternatives (by Douglas Crocker in Chapter 4) and an analysis of the impact of the cancellation of the ALSANDS project (by Peter Dungan in the Appendix to Volume 1).

The focus of this study is on the long term, and it was to long-term questions that most of the research was devoted. Yet, inevitably, a long-term analysis must say something about the short term, and 1982 has proven to be a year of many short-term (it is hoped) surprises. 1982 has also seen what may be the beginning of some more fundamental shifts in the Canadian economy - most noticeably in the reduction of anticipated levels of natural resource investment and in their greater dispersion across Canada.

If important changes are occurring in an economy, economic projections will tend to change frequently. The evolution of both the immediate and long-term outlook in Canada can be traced in this book. Work on this project began in the summer of 1981, and preliminary results were presented at the Ontario Economic Council's October 1981 Conference, 'Outlook and Issues'. Comments received on the preliminary work, along with more recent data, were incorporated in the projection of February 1982, which is described in

Chapters 1-3 of Volume 1. By April 1982 the ALSANDS project had been cancelled and the Cold Lake project postponed several years (at best). A study examining the impact of the ALSANDS cancellation was then appended to the book.

By September 1982 the original study was almost ready for publication. By this point, however, the Policy and Economic Analysis Program at the University of Toronto had prepared a new base case that directly incorporated the major events since February and extended the projection through 1995. The Council felt it would be useful to publish this new work with the original study.

The differences between the two major projections are obvious - especially for the short term. Most noticeably, the February solution saw 1982 as a year of low growth, but in no way predicted the depth of the recession which eventually developed. In the longer term, the two solutions are less far apart; without a number of the major natural-resource projects, the September solution shows a lower average growth rate, although growth is more evenly distributed across Canada. Even the September solution is now somewhat dated in its projections for interest rates and inflation for the short term. Interest rates and inflation will clearly be lower than those projected, but the researchers maintain (see Volume 2) that their results for real variables (growth, employment) will be much less affected by recent developments. The researchers have built into their projections an assumption that, in the absence of a change in the structure of the Canadian economy, a tradeoff between unemployment and resurgent inflation will continue to trouble the Canadian economy through the 1980s.

Clearly, the Canadian economy is susceptible to numerous outside forces such as the world oil price, foreign interest rates, and the general level of economic activity in other nations. Domestic projections must predict changes in these outside forces as well. Both domestic and foreign changes are often the result of modifications in government policies, and so researchers must also be able to anticipate such political modifications. One might wonder whether the importance of world forces and political decisions is expanding in a manner that will make domestic projection exercises increasingly difficult and prone to error. Perhaps researchers will simply have to become more expert in predicting changes in external forces and political decisions. In the interim, the users of this type of projection, who must still make tough decisions in an unstable world, will have to become more cautious in applying such projections to their own problems and more careful in choosing among alternatives.

There is an interesting interaction between the policy assumptions used as input to an economic projection and the resulting projection itself - especially when the projection results indicate that the policy may have ill effects. This study presents two revealing examples of how projections depend on predictions of what policy-makers will do. Early analysis (see Chapter 5, Volume 1) indicated that the recent Alberta-Ottawa Energy Accord would leave very little in after-tax profits to the oil companies, and suggested that energy megaprojects were thus jeopardized. Despite this, the projection kept the projects in place and did not assume an alteration of policy. As events developed, the analysis was partly vindicated. More money has now been redirected to the oil companies, and the megaprojects were indeed cancelled - although the cancellation was clearly also due to changing perceptions of future world oil prices. Thus, this element of the February projection was in error because assumptions were not changed when the model signalled problems. In the second example, the February projection was far too optimistic for 1982 because the authors assumed that policy (especially American monetary policy) would relax in order to avoid recession. Here the authors heeded the model's warnings and changed assumptions, but policy-makers kept to their course and the recession occurred - although there do seem to be signs of relaxation at the time this is being written (January 1983).

In endeavouring to cope with the many assumptions which must be made in order to develop economic projections, researchers have usually adopted a conservative stance and have assumed that the status quo will continue unless they possess some particular knowledge to warrant rejection of the status quo assumption. Consequently, a mere speeding-up of the process of change can make the projection exercise more difficult. In fact, the authors of the present study would not be surprised if many of their model's assumptions and relationships were to be upset by 1995. Their view, developed in Chapter 1, Volume 1 is that even a projection largely founded on past trends and current knowledge is a useful benchmark. They would also claim that the use of a macroeconomic computer simulation model makes possible the rapid and consistent comparison of the effects of alternative assumptions. In fact, the variety of projections and experiments included in this book provide just such a set of 'sensitivity tests', helping to distinguish results that are sensitive to different assumptions from those that are relatively robust.

In spite of the difficulties, the following study presents a thorough and consistent analysis of the long-run trends implied by the policies and relationships that seem most likely to prevail.

Most of the important long-term lessons of the study are supported by both projections. Moreover, they have survived, or indeed been strengthened, by the events of 1982. These lessons are that Canada has the potential to achieve a reasonable rate of growth once the present recession ends, one that will permit a gradual reduction in unemployment; that inflationary pressures will continue to restrain growth unless there are more fundamental changes in the economy; and that Ontario will share in the national growth, growing somewhat more slowly than the national average but maintaining its position as 'centre of gravity' in the Canadian economy.

The researchers have provided a tremendous amount of information that will be helpful, if used carefully, to anyone interested in our economic future. For those concerned with public policy, the following material can be important in such tasks as projecting government revenues. For those concerned with the prospects of particular economic sectors, the information presented can assist in evaluating business opportunities. The model itself can be used to project the effects of various changes in the underlying assumptions, relationships, and policies - as illustrated in Chapter 4, Volume 1 and in the contrast between the projections presented. From these points of view, the following material is important and useful, regardless of the difficulties created by a rapidly changing environment influenced by alterations in foreign circumstances and by shifts in government policy. This book presents a stimulating view of the projection process based on economic models as well as a substantial amount of interesting and useful information about the Canadian and the Ontario economies.

David W. Conklin
Research Director
Ontario Economic Council

Acknowledgements

This is an update of two earlier studies undertaken by the Ontario Economic Council. Although the models have changed since those studies, our present work is built inseparably upon the research efforts of their authors. As such, we would like to thank Professors D. Foot, J. Pesando, J. Sawyer, J. Winder, and P. Dungan. In addition, we would like to thank all other contributors to the FOCUS and PRISM models, especially Professors G. Jump and B. Milne. The Ontario Economic Council and its staff, particularly N. Cole and N. Savoie, who typed and retyped, and B. Huff, who assisted with the editing and publishing processes, deserve special thanks. L. d'Anjou edited the manuscript, and the authors gratefully acknowledge her assistance. Perhaps our greatest debt is owed to Doug Hartle, who in his capacity as Research Director of the Ontario Economic Council often provided the criticism and encouragement necessary to complete the study.

Previous segments of the study were discussed in public at different times during the research period. An earlier version of Chapters 1 through 5 was presented at the Ontario Economic Council's Outlook and Issues conference in October 1981. The general comments of the conference participants and those of the discussant, P. Gusen, are acknowledged. The appendix to this study benefited substantially from the remarks of T. Maxwell.

Despite the great deal of competent assistance the authors received, we wish to exonerate all the above-mentioned persons and claim full responsibility for any errors or omissions.

1
Introduction, objectives, and methods

What are the prospects for the Ontario economy during the rest of the 1980s? How sensitive is the Ontario economy to alternative government policies, to foreseeable changes at home and abroad, to various more problematic developments? In 1977 and 1978, these and related questions were addressed in special studies prepared for the Ontario Economic Council by the Institute for Policy Analysis, University of Toronto (Foot et al. 1977; Sawyer, Dungan, and Winder 1978). This book is an update and extension of these earlier works; the computer-modelled projections at its heart were run in February 1982, and most of the text was written by April 1982.

Although this study is based on new tools developed and lessons learned in the years since the appearance of its predecessors,[1] it must be considered no more than a single and imperfect contribution to the wide-ranging debate on the prospects and problems of Ontario's economic future, and to the very young art of regional economic analysis in Canada. One of the most important lessons of the last few years is that studies such as this one, while helpful, must be used carefully.

The remainder of Chapter 1 discusses the study's objectives and methods. The authors advise reading the whole chapter so that basic objectives, methods, and limitations are understood. Skipping the detailed section on the computer models used will not result in any loss of continuity, but we suggest an attempt at reading it.

Since the economy of Ontario cannot be examined in isolation from that of

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[1] Note that certain features of the earlier studies - most notably, the analysis of capital markets and of Ontario government revenue and expenditure - have not been included in this update.

Canada as a whole, Chapter 2 presents our key assumptions for the Canadian economy and discusses the base-case national projection from which we derived the Ontario outlook. Then Chapter 3 examines the Ontario base-case projection, the assumptions underlying it, and some of its implications.

Of course, no one set of assumptions for Canada or Ontario will be thought likely by all analysts. Ongoing policy debate requires estimates of the impact of alternative assumptions. Chapter 4, therefore, presents a number of sensitivity tests in which key assumptions are altered and the resultant effects examined. Chapter 5 takes a retrospective view and attempts to gauge the impact on Ontario of the September 1981 Energy Accord.[2]

OBJECTIVES OF THE STUDY

Clearly, the challenges of an ever-more-complex economy require ever-more-careful economic planning.[3] Now, effective planning requires knowledge of the future. Certainty, of course, is impossible, but the planner must have at least some conceptions of what the future holds in store. These conceptions are of two basic types: those specific to the particular firm, institution, or government, and those concerning the wider economic environment in which the specific unit operates. To obtain the former, firms, governments, and institutions may be able to deploy considerable in-house resources or gain access to the research of sector-specific analysts, perhaps through trade associations. Somewhat more difficult to obtain is a picture of the wider economic future, especially a picture composed of numbers, not simply adjectives such as 'gloomy' or 'bright'. Large firms and governments may be able to develop their own analyses or commission such research privately, but this option can be expensive. The first objective of this study,

[2] An appendix attempts to gauge the impact of the cancellation of the Alsands megaproject.

[3] Of course, in Canada 'economic planning' does not mean the rigid 'command' planning of Soviet-bloc nations nor even the indicative planning that has played a major role in the French economy. Rather, 'economic planning' means individual, decentralized planning for the future by firms, government, and institutions, a practice recognized almost universally as sound, even essential. Calls for an industrial strategy in Ontario or Canada essentially urge more indicative planning at a high state level, which would require even more careful enquiries into the future.

therefore, is to make at least one view of the future of the Ontario economy publicly available as an aid to planning by all firms, local governments, and institutions and as a contribution to the in-house and private analyses conducted by larger units.[4]

One caution seems necessary. Virtually any economic unit has relatively good knowledge of its own sector; a very general study such as this cannot embody such insiders' knowledge. Thus, for example, while Chapter 3 details Ontario's future output and employment by industrial sector, almost any firm can probably better those projections for its own sector. Where the present study may prove useful is in providing projections for the whole economy and for client and supplier sectors - projections perhaps superior to those obtained by back-of-the-envelope or 'guesstimation'.

Also important to realize is the time frame of this study. Many analyses look to the short run - the next one to two years. Yet economic planners must often look well beyond that time. Even a decade may span only a fraction of the life of a new plant, public building, development strategy, or long-range government program. Indeed, as the economy has become more complex, as the lead times of major projects have grown longer and longer, and as the short term has become more volatile, planning for the longer term has been thrown into greater prominence. Thus, this study concentrates on the medium term, which we here define as the years through 1990.

Given this focus, the study does not attempt to capture the short-term ups and downs that will almost surely occur. (Indeed, such predictions would be impossible beyond the next two years.) Instead, it projects an average or 'trended' picture of the economy through the end of the decade. For medium-term planning, the average or trend should suffice - provided planners build in plenty of safety devices to cope with the unpredictable short-term ups and downs.

Planning for the future also requires some notion of how sensitive the economy is to shocks from abroad, to alternative policies, and to variations from certain key assumptions underlying the picture projected. This study addresses sensitivity analysis in Chapter 4 by examining the probable effects of change in each of seven variables.

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[4] Responses to the two predecessors of this study (Foot et al. 1977; Sawyer, Dungan, and Winder 1978) suggest that they have often played this role.

To sum up, the objective of this study is to make publicly available a general picture of the medium-term future of the Ontario economy and of its sensitivity to possible alternatives, all as a contribution to the planning that every sector of the economy must do.

THE NATURE OF THE PROJECTIONS

The Chinese curse 'May you live in interesting times' has clearly beset those who look into the economic future, for these are indeed interesting - and cursed - times to be a 'forecaster'. During recent years, the economy has been more volatile and surprising than during the two previous decades. For example, this study's two predecessors, while primarily concerned with the longer run, clearly missed the turmoil of the late 1970s and early 1980s, although they were not off the mark in suggesting that the high growth rates of the 1960s and early 1970s would not be returning. If this cloud has a silver lining, it is the fact that both economic predictors and the consumers of their analyses have been forced to take a closer look at what is being done and what can be done.

First, it must be emphasized that the numbers presented here, as in the earlier studies, are conditional projections, not forecasts. The distinction is important for appreciating what the study says and does not say. To make a long-term forecast for Ontario would require, among other things, a careful study of Middle Eastern politics to determine if a revolution in Saudi Arabia might occur during the designated period, causing a serious oil shortage. It would also demand an analysis of Canadian and world politics fine enough to determine if (or when) governments will make those errors of policy that often cause or exacerbate the ups and downs of the business cycle. Such precision is conceivable for perhaps as long as two years into the future, but it may well be impossible for the longer run. And certainly, the analysis required for an unconditional forecast of, say, the Ontario gross domestic product in 1989 would require a research team and resources well beyond those available for the present study.

Our ambition - to provide a conditional projection - is accordingly more modest. The study began with the economy's present state, with its more solid, underlying trends, with current policy stances, and with policy agreements for the future (for example, the Alberta-Ottawa Energy Accord of September 1981). These trends and policies were then projected forward, but not always by simple extrapolation. Rather, we used considerable judgement about probabilities. For example, while we assumed westward migration will continue, we recognized that there are limits to its growth and scale, so we levelled it off for the last few years of the decade. Again, while Ontario's labour productivity has declined over the 1970s, falling back towards the national average, it can be argued that this drop has largely been the result of the economy's natural equilibrating mechanisms, working through labour and capital mobility. Hence, it would have been foolish to extrapolate the downward movement so that the province fell much below the national average. What seemed much more reasonable was a settling of productivity around the national average.

Such judgements are scarcely an exact science, so their results can make no claim to seeing the future with any great clarity. At best, they may suggest the direction in which the economy is moving and yield a blurred picture of the destination. They can say almost nothing about the meanderings the road may take along the way.[5]

The use of computer models

Given a goal of conditional prediction, analysts can proceed in several ways. Perhaps the most important point to note here is the extensive use we made of macroeconometric models, manipulated by computer. (The computer modelling systems we used are described in the following section.)

Computer models of the economy have an important role to play in developing conditional projections. First, they embody in their equations much of our knowledge of past trends and policies, as collected and refined over a span of years. Second, they keep various projections of key trends and policies consistent with each other. For example, a model may show that certain policies, if simply continued, would lead to politically unacceptable results; this is a clear signal that the policy is likely to be altered. Third, from the basic trend and policy projections, the models develop important and specific details on which judgement might otherwise be silent. The industrial detail presented in this study is an example.

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[5] It must be noted that some people claim it is impossible to know anything meaningful about the economy more than one or two years in advance. If this is true, then, of course, longer-term planning is also impossible. No matter what the merits of the argument, the extent of resources that both governments and private business devote to planning suggests that it is not a majority opinion.

The fact that the numbers reported here were generated by computer should give the reader no false sense of precision - it gives the authors none. Economic modelling, especially the modelling of provincial economies, is still in its infancy. The computer did not produce the projections of this study in any mechanical fashion; rather, the trends and policies fed into the models were often obtained and adjusted judgementally. Indeed, judgement and the models often worked in co-operation, as when the models showed that our initial judgements were inconsistent and caused us to make new ones. At other times, the mechanical operations of the models had to be partly overridden by judgement - for example, in developing the difficult area of the exchange rate and foreign capital flows. In the discussion of the projections, the study attempts to be as candid as possible about these occasions.

Alternative methods

Is it possible to use different means to make conditional predictions about the medium-term economy? Is it possible to look ahead more clearly and accurately?

It is certainly possible to look ahead by different means. The two principal alternatives to model-based projection are pure judgement and what might be called 'special knowledge'. Many individuals have been quite successful in looking into the future of the economy using judgement, often judgement based on long years of careful observation and reflection. In effect, these people have constructed models of the economy in their own minds, instead of in a computer, and some of them perform very well. 'Mental models' do have two major drawbacks. First, they cannot be communicated precisely to other researchers, and only with difficulty can they be passed down to others or improved by others' work. Second, it is often difficult for their operators to separate input from output - to separate their judgement-based assumptions from their results. Nonetheless, judgement by specific knowledgeable and experienced individuals remains a major source of information about the future, one that cannot be ignored by the serious planner. The Ontario Economic Council and the authors invite such individuals to respond to this analysis so that later studies can try to incorporate their insights.

Views of the future based on special knowledge could offset one of model-based projections' major drawbacks: their failure to incorporate 'surprises'. The outstanding example of this in the past decade was most studies' failure to predict the major petroleum-price increases of 1973 and 1979. Individuals with special knowledge may have a better idea of the surprises in store for their own areas than do general researchers; today, they may point to futures with, for example, generally used and effective energy conservation and no nuclear power (or vice versa) or with massive unemployment resulting from the widespread use of microelectronic devices. Since the consequences of some such surprises would be serious and the experience of some of those who can predict them is great, the planner cannot ignore special knowledge as an alternative to the method of this study. However, surprises, by definition, are not expected by the majority, so to include them in a basic projection would leave the majority dissatisfied. Moreover, a specialist, again by definition, has difficulty integrating a surprise seen in his or her own area into a picture of the economy as a whole. Many tend to overlook or underestimate the natural equilibrating tendencies that can dampen the effects of a surprise. Economic models may offer a useful tool for estimating the impact of the unexpected on the entire economy, and we hope that future research on economic projections can include more sensitivity tests incorporating possible surprises.

THE MODELS: FOCUS AND PRISM

This section describes, with as little technical language as possible, the computer simulation models used for this study. It is designed to help readers to understand how we made our projections and hence to judge their validity.

What is a macroeconometric model?

First, what is a macroeconometric computer model, and why can it be useful?[6] The initial step is to recognize that successive sets of numbers can represent most critical aspects of the economy over periods of time. For example, statistics are available each year and quarter for the Canadian gross national product (GNP), and they are available every month for the unemployment rate and consumer price index (CPI). Macroeconometric models use these numbers to represent or simulate the economy mathematically, usually not just at one point of time but at successive intervals.

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[6] This section is based in part on Dungan (1981a).

Thus, a macroeconometric model is composed of numerical variables, such as GNP or the exchange rate, and their changes over time. The basic division is into *ex*ogenous variables (those determined *out*side the model and taken as given) and *en*dogenous variables (those determined *in*side the model on the basis of our understanding of the economy). Naturally, the division between the two is rarely clear cut; much depends on the orientation of the model. The model of the Canadian national economy used in this study has about two hundred exogenous variables, including population size, the level of GNP in the United States, and dummy variables representing strikes; its more than three hundred endogenous variables include Canadian GNP, the exchange rate, and exports of automobiles to the United States. Another, related model was used to break out the national results into industrial and provincial detail; although its structure is much simpler than the national model's, because of its detail, it has more than two thousand variables, of which about seven hundred are exogenous and the rest endogenous.

Endogenous variables, in turn, are of two major types: identities and behavioural variables. Identities are simply definitions or representations of accounting practices. Thus, in the models we used, GNP, as in the National Accounts, is the sum of consumption plus investment plus government plus exports minus imports - each item being the sum of more detailed components. Similarly, consumption of durable goods in current dollars is, by definition, simply consumption in 1971 dollars (real consumption) times the price of consumer durables (defined as an index with 1971 = 1.0). At the heart of the model are the behavioural endogenous variables; the equations for them, as the name implies, attempt to embody current understanding of how particular aspects of (or actors in) the economy behave over time. The behavioural equations are obtained from economic theory and applied to the data through statistical fitting techniques. Economists share some of these techniques with other natural or social sciences, but many have been developed or refined by the special branch of economics called econo*metrics* (the science of economic *measurement*).

When all the variables, identities, and behavioural equations are loaded into the computer,[7] the model can be solved simultaneously (all the equations and identities interact) and dynamically (the model solves for successive time periods) to obtain numbers that represent (or simulate) the Canadian economy over time.

The model and its solutions provide much valuable information in themselves since they reflect the complex interactions of the economy. They also provide a much-needed base for investigating the effects of possible changes. Economists, like other social scientists, often envy the way in which their colleagues in the natural sciences can conduct carefully controlled experiments to test and probe reality. By contrast, economies are rarely placed at the disposal of would-be experimenters (a fact in which even economists perhaps take comfort). In the words of Alan Powell, 'Typically nature presents to the applied economist an indifferently designed experiment which she doesn't even have the courtesy to replicate.' (1980, 2). A simulation model of the economy can, however, be subjected to controlled, replicable experiments. (In fact, the physical sciences also often use this strategy - for example, simulating the effects of wind flow around a proposed building design.) It is also possible to project the values of the exogenous variables into the future and then solve the model to produce a conditional projection of the entire economy. The latter exercise, because of the complexity of reality, still requires healthy doses of external judgement, but macroeconometric models have proved themselves important tools - although by no means the only ones - for those whose task is investigating the future.

Moreover, with a reality as complex as an entire economy, empirical simulation models provide an ongoing tool for organizing, embodying, and remembering individual advances in theory and application. Of course, computers, in which the models reside, never learn anything by themselves, but they have the great virtue that (barring accidents) they never forget anything either. It is difficult for the human brain to keep an economy's many indirect interrelationships in mind. But with a simulation model a researcher can, as in Chapter 4 of this study, pursue experiments on taxation strategy confident that the model will show their long-run implications for, say, the balance of trade - implications perhaps stemming

[7] The many variables, identities, and behavioural equations present a large mathematical problem; thus, researchers find computers essential to managing and solving models of any larger than perhaps a half-dozen equations.

from elements of the model developed several years previously by a different researcher for a different purpose. Also, for a projection into the future, the model is vital in checking the consistency of judgement-based projections of exogenous variables. For example, when we were working on the projections presented in Chapters 2 and 3, the model's first results clearly pointed out inconsistencies between our initial projections of the westward shift of economic activity in diverse sectors and our assumptions about the westward migration of population.[8]

The 'top-down' approach

Theoretically, one could model the Ontario economy using a 'top-down' or a 'bottom-up' approach.[9] A 'top-down' system first makes a projection of the national macroeconomy in the aggregate; then details for industries and for each of the provinces are broken out and constrained to sum to the national totals.[10]

The alternative approach would construct a picture of the Ontario economy by adding up details by particular sectors or even subregions. Each system has its problems: the 'top-down' approach may miss the influences of special factors relating to particular industries or areas, while the 'bottom-up' approach cannot take proper account of the fact that much of what affects Ontario is national, even international, in scope (for example, the relationships between exchange rates, interest rates, and federal monetary and fiscal policy). We selected the 'top-down' approach for two reasons. First, in our view, the impact of national and international trends and events cannot be omitted from a study of Ontario. Second, although the art of regional modelling is in its infancy, for a variety of reasons more work has been done using the 'top-down' approach. To our knowledge, no carefully constructed 'bottom-up' model of the Ontario and national economies has yet been constructed (or, at least, been made publicly available). Thus, the 'top-down' approach offered the best combination of utility and feasibility.

[8] Most startlingly, these inconsistencies showed up as impossibly low unemployment rates for Alberta.

[9] The ideal approach - a combination of 'bottom up' and 'top down', which would necessarily cover all provinces - may not be realized for many years.

[10] For a relatively nontechnical description of the 'top-down' and alternative approaches, see Milne (1981).

The models package at the University of Toronto: FOCUS AND PRISM

For our study we used two models, FOCUS and PRISM, available at the University of Toronto. Although the two are carefully related to each other so as to form a single package, they are quite different in content, orientation, and operation (See Table 1.1).

The FOCUS national model

FOCUS (Forecasting and User Simulation Model) is a second-generation, quarterly model of the aggregate Canadian national economy, developed and maintained at the Institute for Policy Analysis, University of Toronto.[11] By current standards, it is of medium size, comprising more than five hundred variables, about three hundred of them endogenous. Included are all the major macroeconomic variables of general interest, including GNP, national income, and their components; wages and prices; employment and unemployment; interest rates; international trade and capital flows; and the exchange rate.

FOCUS has been especially designed for longer-term and policy analysis rather than short-run forecasting. To this end, it has been made congruent with current economic theory (for example, it pays careful attention to aggregate supply and to supply-side constraints), and many policy levers and options have been built into its structure (for example, a user can specify one of a number of targets for monetary policy, including the interest rate, the money supply, and the exchange rate).

Operating simultaneously with FOCUS is a small energy-accounting module that makes it easier to deal with the many details of oil and gas pricing, trade, production, demand, and revenue allocation.[12]

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[11] FOCUS was first introduced in 1977 but has undergone numerous changes since then. The versions used for the present study were 81D and 81E. FOCUS has its roots in the earlier TRACE and QFM models; in fact, the Institute's work on macro models goes back to the late 1960s. Major contributors were Gregory Jump (designer of FOCUS and QFM), John Sawyer (designer of TRACE), Peter Dungan, David Foot and Thomas Wilson. Complete documentation for the model is contained in the Institute for Policy Analysis (1982).

[12] The energy module is based upon a similar tool developed by Percy Thadaney and James Osten, Data Resources of Canada, Inc.

TABLE 1.1

Models package at the University of Toronto

FOCUS
- National
- Quarterly
- Complex and simultaneous
- Single sector
- Both demand and supply elements integrated
- 500+ variables

↓

Expenditure detail
Aggregate output, prices, employment, etc.

↓

PRISM

- Annual
- 23 industrial sectors
- All provinces, plus the combined territories
- Simple structure; slight simultaneity
- Supply orientation; economies built from sectoral detail
- 2000+ variables

The PRISM model

PRISM (the Provincial-Industrial Satellite Model) is a large but relatively simple annual model that expands FOCUS's national simulations into their provincial and industrial details. At present, it breaks out twenty-three industrial sectors and all ten provinces plus the combined territories. It is a direct but much expanded descendent of the models used to examine the Ontario economy in this study's predecessors (Foot et al. 1977; Sawyer, Dungan, and Winder 1978).[13]

PRISM operates in two major stages. In the first, the pattern of final

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13 For a description of the earlier model, see Sawyer, Dungan, and Winder (1978, appendix to chapter 3). Model was designed by John A. Sawyer and developed with the assistance of Chukwuma Obidegwu and Peter Dungan. PRISM was introduced in 1981; the version used for the present study was 81B. Full documentation for PRISM is available from the Institute for

demand derived from FOCUS is expanded into national industrial output, price, and employment detail, depending in part on an input-output framework. (The version of PRISM that we worked with used a 1977 input-output table.) The use of input-output relationships also allows for all required intermediate production.

The second stage of PRISM is the estimation of provincial detail. Here PRISM depends first and foremost on provincial shares of the outputs of the different industrial sectors. Many of these shares are exogenous to the model, but those for most tertiary sectors (such as services and finance) are produced endogenously in a very simple fashion. Applying the shares to national industrial outputs (real and nominal) and summing across sectors yields provincial real and nominal GDPs. Additional simple relationships break down the nominal provincial GDPs into income components. Employment by province also depends on sectoral shares, adjusted for provincial differences in labour productivity. Provincial labour-source populations are exogenous,[14] and participation rates are determined by simple relationships.

For both the industrial and the provincial detail, PRISM users always enforce strict consistency with the FOCUS national totals, providing an important check on the provincial projections. For example, as we have already mentioned and will discuss in greater detail in Chapter 2, it was unreasonable results for the western provinces, not for Ontario *per se*, that caused us to revise downwards our early projections of shifts in economic activity to the West.

THE NATURE OF THIS STUDY

Recall the distinction we drew between a forecast and a conditional projection. This study can only be described as an example of the latter - it assumes that present-day trends continue and that the rest of the decade has no major surprises in store for the economy. For it, we used large-scale econometric computer models designed to represent the Canadian and Ontario economies. Their structure uses a top-down approach: first, the researcher completes the national projection, and from this come the provincial

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Policy Analysis, University of Toronto. For an introductory description, see *Economic Policy Review* 3, no. 2 (Policy and Economic Analysis Program, Institute for Policy Analyis, 1981).

[14] For our study, these estimates were supplied by Foot (1982).

projections. In examining them, the reader should remember that the computer was used as an aid in computation and a check on consistency. Moreover, the projections incorporate both the views of the authors and, indirectly, those of numerous other individuals. The results of this mix are discussed in the following chapters.

2
The national projection

Since Ontario's economy cannot be studied in isolation from that of Canada and of the world, the reader must know the national projections on which we base our picture of the province's future. This chapter has three major sections. The first examines our key assumptions about the world economy, energy, major national trends, and policy stances across the country. The second section presents an overview and discussion of the results; it describes some of the ways in which we check for consistency, relates the results to the assumptions, points out possible weak spots, and suggests areas that might be especially susceptible to alternative outcomes. The last section examines the national industrial detail developed with the PRISM model.

MAJOR ASSUMPTIONS

The Ontario projection depends in good part on the national projection, and both depend on key assumptions about the future. In many cases, these are expressed as the values assigned to the exogenous variables of the FOCUS and PRISM models. Sometimes, however, we override the models' behavourial equations because we believe that behaviour in the future will differ in certain respects from that of the past.

This section examines our key assumptions in four major areas: (1) the international economy, principally that of the United States; (2) the energy sector; (3) trends underlying the rest of the national economy; and (4) government policy across the country.

Assumptions about the international economy

For Canada, the primary focus of any consideration of the international economy must be on the United States. Table 2.1 presents a brief summary of the U.S. projection that lies behind the projection for Canada.[1] For historical comparison, it and subsequent tables also show averages of the relevant statistics for 1962-73 and 1974-80. (The dividing point was set at 1973-4 to differentiate the more 'normal' - or perhaps abnormally good - period of the 1960s and early 1970s from the more troubled and, one hopes atypical period of the middle and late 1970s.)

As Table 2.1 shows, the projection for the United States assumes the current experiment of 'Reaganomics' is not nearly so spectacular a success as the Reagan administration predicted in 1981. One can hope that the experiment may yet work, but evidence at the time of writing (April 1982) suggests its results are, at best, mixed.[2] In fact, current and projected U.S. policy stances are themselves mixed, combining severe monetary restraint with fiscal policy that is at best neutral and may be quite expansionary once the additional scheduled tax cuts and defence spending are effected.[3]

Such a policy mix might have a negative effect on longer-run capital

[1] The U.S. assumptions are taken, with slight modifications, from a projection for the U.S. economy developed in 1981 by Data Resources Inc., Lexington, Mass. and made available through DRI Canada.

[2] U.S. evidence from the first quarter of 1982 indicates a considerable slowdown of inflation in both wages and prices. Yet these results may come in part from three factors: (1) the considerable attention paid to foreign competition in the auto industry, leading to the realization that the U.S. industry requires a 'one-time' adjustment in costs to stay alive; (2) deregulation in trucking and other industries (ironically, done under President Carter), which has led to highly visible wage rollbacks; (3) falling real - even nominal - oil prices, which, with the U.S. now at world prices, are translated into domestic prices, unlike the case in Canada. All of these are special factors - perhaps even lucky breaks - whose effects have been amplified by the recession induced by monetary restriction. It is difficult to separate the contributions of these special factors from those of the now relatively severe recession. It is also difficult to determine how much of the United States' relatively low inflation of later 1981 and early 1982 will be translated into generally lower inflation expectations, and whether inflation will be boosted substantially upwards again when the U.S. economy begins to recover.

[3] It seems unlikely that further cuts in nondefence spending and social programs could be large enough to offset the net effect of fiscal expansion.

TABLE 2.1
The U.S. economy

	Annual Averages			
	1962-73	1974-80	1981-5	1986-90
Real GNP growth	4.2	2.5	2.8	2.9
Inflation rate (GNP deflator)	3.6	7.7	8.6	7.0
Treasury bill rate	4.7	7.5	13.1	9.9
Industrial bond rate	6.0	9.2	12.8	11.3

formation. It is, of course, partly offset by tax-law changes to treat depreciation more favourably, but the extent of the offset is difficult to determine.

Our conservative estimates of the results of U.S. policy can be seen in Table 2.1. Net moderate restraint keeps the average real growth rate well below that of the 1960s and early 1970s; in the later 1980s, reduced population growth also reduces potential growth. (Even so, the projection is optimistic in showing growth rates above those of the troubled 1974-80 period.) Inflation is gradually reduced; from 1982 onwards, it is not projected to return to double digits. The impact of continued monetary restraint can be seen in the high interest rates, although these, too, fall with inflation. Real interest rates are higher in the 1980s than in the earlier periods (if actual inflation can be taken as expected future inflation).

Greater success in the U.S. would, of course, considerably alter the outlook for Canada and Ontario, primarily for the better in that extra growth and reduced inflation in the States would almost inevitably spill over the border.

The rest of the world

Of course, the world beyond the United States is also important for the Canadian economy.[4] We assume that the rest of the world will proceed, in relation to the United States, much as it has in the past - that is, with a somewhat greater rate of growth and with mixed inflation performance. The projection includes no major shifts in the balance of economic power, no major changes in the 'rules' of international trade and financial relations, and no major trade disruptions, such as the drastic oil price rises of the 1970s and the shifts in commodities of the early 1970. It does, however, assume some real increase in petroleum prices, a subject discussed in more detail in the next subsection.

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[4] Sometimes the point is not as obvious as it seems. For example, popular attention in 1981 and early 1982 has concentrated on the relatively slight depreciation of the Canadian dollar vis-à-vis the U.S. dollar, ignoring the considerable appreciation of both currencies against most other countries' - an appreciation with important implications for Canadian trade.

Naturally, it is unlikely that the coming years will really be so smooth. We will undoubtedly have surprises, both up and down. The best the researcher can hope is that the present projections give a fairly accurate picture of average performance.

Assumptions about energy

The effects of energy-sector variables are pervasive, and we have had to make a number of problematic assumptions on the subject. Before discussing them, we must stress that the focus of this study is the macroeconomy, not the energy sector, a fact that necessitates the use of a certain degree of approximation in the assumptions. Moreover, even if an assumption appears unreasonable to some people, the alternative's direct effects on the macroeconomy may be mitigated by other indirect changes. For example, if oil production is lower than assumed here, the exchange rate would have less tendency to appreciate, encouraging real output in other sectors. (Of course, even such intersectoral shifts can have important effects on the Ontario economy.)

The assumptions about energy are summarized in Table 2.2. (Details are at the end of the chapter: on production, demand, and prices in Table 2.19, on trade, revenues, and subsidies in Table 2.20 and on balance of payments and refiners' acquisition prices in Table 2.21.) Several points about world price and supply, domestic price and production, domestic demand, and external trade merit some discussion.

World price and supply

We assume that, the world price of petroleum remains more or less stable (vis-à-vis the U.S. GNP deflator) through 1984 and then grows at 5 per cent

TABLE 2.2
Assumptions about energy: summary

	Annual Average		
	1981-3	1984-6	1987-90
Petroleum import price (US$/bbl.)	37.30	49.42	74.60
Growth rate	9.7%	11.4%	12.3%
Refiners' acquisition price ($/bbl.)	32.00	50.27	77.67
Growth rate	33.0%	14.2%	12.9%
Petroleum production (mill. bbl.)	537	487	558
Petroleum imports (mill. bbl.)	153	174	98
Balance on trade in petroleum and natural gas ($ bill.)	0.37	0.24	9.26

per year in real terms. This projection implies that the Organization of Petroleum Exporting Countries does not break up, and that the oil glut of early 1982 is relatively transitory, disappearing as the world economy begins to pull out of recession.[5]

The projection is pessimistic in that it sees real world oil prices continuing to rise after a brief hiatus. Yet it is optimistic in that it sees neither a repetition of the huge increase of the 1970s nor a major shortage or embargo. Moreover, it seems wise to be conservative with respect to so important a commodity as petroleum. Indeed, even if OPEC collapses, it seems unlikely that most western nations would permit the real price of petroleum to fall sharply; rather, they would use taxes and tariffs to keep domestic prices up, to preserve energy security, and to protect major investments in energy conservation and the development of alternative energy sources.

Domestic prices and production

The basis of our projections for domestic energy is the Energy Accord between the federal and Alberta governments, signed on 1 September 1981 (Canada 1981). All its major provisions are assumed to remain in place

[5] For the real price to rise after 1985 requires some degree of market power to return to OPEC; more than likely, this will not occur gradually, as assumed, but suddenly as a disturbance upsets one or more of the major producers. This possibility is included in the projections, but it is averaged out, rather than placed at a specific point of time.

through 1986, as scheduled, and to be extended through 1990; the sole exception is that federal revenues are somewhat reduced in the latter period and revenues of the energy corporations correspondingly increased. This assumption follows from our analysis of the Accord, which finds that the agreement gives the corporations a relatively small share of revenue (see Chapter 5 of this book, and Scarfe and Wilkinson 1981). Since we also project the federal deficit to be much reduced by 1986, we feel that any re-negotiation of the Accord is likely to result in a greater corporate share, especially if such an increase is felt necessary to stimulate further exploration and development.

The Accord specifies a schedule of prices for 'new' oil (the New Oil Reference Price) with a maximum equal to the world price. Under the assumptions made for world prices, this upper ceiling becomes effective in 1982 (see Table 2.19). A second schedule sets the price of 'old' conventional crude oil at a maximum of 75 per cent of the import price, effective in 1984. For Canadian consumers, the key price of oil is the Refiners' Acquisition Price (the blended price), which is the sum of the price of 'old' conventional crude oil and the Petroleum Compensation Charge (the charge the federal government levies to compensate for subsidies paid on imported oil and to producers of new oil of all kinds). Under the Accord, the federal government agreed to set the compensation charge so as to make collections approximately equal to subsidies. This agreement ties movements in the blended price to movements in the world price, and, once the Accord is fully in effect, the blended price approaches the world price as the proportion of 'old' crude in Canadian consumption diminishes. Thus, as shown in Table 2.2, the blended price is projected to rise 33 per cent in 1981-3 (mostly in the first two years of the period); thereafter it goes up only slightly faster than the import price. The 1987-90 average of $77.67 per barrel in Canadian dollars equals approximately $67 in U.S. dollars - still below the U.S. import price.

The price projections for natural gas also follow the Accord, which deliberately keeps gas prices low, relative to oil, to encourage conversion. To the extent that conversion does take place, domestic energy costs are further below world prices (at least, pre-tax prices) than the path of the blended price alone would suggest.

Projecting domestic production is more difficult than projecting prices since production schedules cannot be laid out in signed accords.[6] As shown in Tables 2.2 and 2.20, the assumption is that petroleum production falls in mid-decade, then rises again. A steady fall in production of 'old' conventional crude first dominates but is then overtaken by a rising output of 'new' conventional crude, of oil-sands (synthetic) production, and of petroleum from the offshore Hibernia fields.

The projections assume the eventual building of both major planned oil-sands plants (Alsands and Cold Lake). Between the time of writing this book and the time it entered production, the announced cancellation of the projects proved this assumption overly optimistic. To incorporate this development in this study, Professor Dungan analysed the cancellation effects separately; the results are presented in Appendix A. They show that, although the oil-sands plants were touted as being extremely important, their 'loss' has a surprisingly small impact on the national and provincial economies, particularly before 1988. Therefore, although the projections presented in Chapters 2 and 3 do not incorporate the cancellation, we feel they continue to be valid. In any event, political pressures may force completion of at least one of the plants, perhaps with near-total government ownership.

Our excessive optimism regarding the oil-sands may however, be offset by too-pessimistic assumptions for Hibernia production and the development of recent discoveries of natural gas on the east coast. (Indeed, all the assumptions for growth in natural-gas production are relatively modest.)

Dropping one oil-sands plant, with no corresponding increase in production elsewhere, would probably affect the projection at the margin in the following ways: the exchange rate would appreciate less in the late 1980s; inflation would thus be slightly higher, and real incomes would likely fall. The results for real output for Canada overall would be uncertain, depending a great deal on policy response. For Ontario, the results would likely be positive, since reduced appreciation would aid the province's exporting and import-competing industries.

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[6] The projections here are partly based on work done in 1981 by Data Resources Inc. and partly on projections done by Energy, Mines and Resources Canada as background to the Accord.

Domestic demand

The assumptions for demand are generally conservative. A rising relative price for oil induces some conservation (defined as a movement away from energy as an input) and some switching to alternative sources, leaving domestic demand virtually unchanged through the 1980s despite real growth in the economy. Therefore, rising production at the end of the decade results in a reduction in imports.

Domestic demand for natural gas, on the other hand, is projected to rise through the decade. The effect of overall conservation is more than offset by a movement towards gas as an alternative fuel, encouraged by its price being kept below that of oil.

The most likely alternative to these demand assumptions is, of course, more drastic conservation or a switch to alternative sources, induced by higher prices. In that case, real demand, especially for petroleum, would fall. However, such adjustments to prices are not - or not yet - visible, and the question of the long-run price elasticity of demand for petroleum is a clouded one. For recent years, it is very difficult to separate the effects of increasing oil prices from the effects of reduced GNP growth.

External trade

Canada both imports petroleum and exports petroleum and natural gas, although its petroleum exports are expected to fall close to zero by 1985 and remain there at least until the end of the decade. In dollar terms, the balance of oil and gas trade was in Canada's favour until 1980 and 1981 (see Table 2.21). It is projected to remain close to zero until near the end of the decade, then to turn sharply in Canada's favour again. Our reasoning is as follows. In the early and middle 1980s, real imports of petroleum increase, as demand holds steady and conventional domestic production is somewhat reduced. But any adverse effect on the balance of payments is offset by an increased value of gas exports, which are assumed to rise in both volume and relative price. (At the time of writing, one can question whether the U.S. market will require the projected volume of exported gas. The relative price assumption also looks increasingly questionable, but the same effect would be achieved if the National Energy Board permits an increased volume of exports - as it is under increasing pressure to do.) By the end of the decade, the increasing flow of 'new' oil permits the assumption of a considerable reduction in imports. Although they are still sizeable (about half the present level), the reduction means that Canada nets more than $10 billion in oil and gas trade in 1990.

We have already discussed the implications of the alternative assumption of a reduction in new production.

Assumptions about trends underlying the national economy

The model includes a host of implicit assumptions about the national economy, most of the negative sort - that is, that Canada will not break up politically, that there will not be any drastic change in the economic 'rules of the game'. Most of these assumptions are obvious and need not be listed. Some may not be so apparent; this subsection addresses several in the key areas of population, the 'full-employment' unemployment rate, and productivity. Others are most profitably discussed in the section on results near the end of the chapter.

Population, including labour-force source population

Clearly, any overall economic projection requires estimates of the total population and its demographic characteristics, including the size of the labour-force population (persons fifteen years of age and older who are not in institutions or serving in the military forces). Table 2.3 summarizes the projections.[7] (For greater detail, see Table 2.25 at the end of the chapter.) The growth rate of the total population falls below 1 per cent a year. An important demographic characteristic of the early 1980s is the passage of the last of the baby-boom generation into adulthood. During the late 1960s and 1970s, the entry of this generation into the labour-force source population kept its rate of growth well above that of the total population's. In the

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[7] Medium-term projections can use independent projections of population growth since economic performance 'feeds back' into population growth only with a very long lag (a possible exception is net immigration). We used recent work by David Foot (1982) for projections of total population and of labour-force source population. However, the FOCUS model generates its own estimates of the source population's rate of participation in the labour force, so our estimates for these figures differ from those of Foot.

TABLE 2.3
Assumptions about national demographics and productivity: summary

	Annual average				
	1962-73	1974-80	1981-3	1984-6	1987-90
Population growth	1.60	1.20	1.06	0.98	0.85
Growth of labour-force source population	2.48	2.14	1.39	1.24	1.00
Growth of labour force	2.98	3.15	2.50	2.01	2.17
'Full-employment' unemployment rate	4.30	5.90	5.20	4.96	4.78
Labour productivity growth[a]	2.47	0.07	0.08	1.19	1.05

a Defined as gross domestic product (GDP) at factor cost per employee.

1980s, the two growth rates approach each other much more closely.

During the mid-1970s, the growth rate of the labour force exceeded the growth rate of the source population by an average of 1 per cent per year, largely because of an increased participation rate for women, both 'young' (ages fifteen to twenty-four) and of 'prime age' (twenty-five to fifty-four). This upward trend is projected to continue through the 1980s. Additionally, the participation rate remains high because the younger members of the baby-boom generation, who entered the source population earlier, are moving into the age group of highest labour-force participation.

The 'full-employment' unemployment rate

Economists have recognized for some time that a zero unemployment rate is not an appropriate target for macroeconomic policy.[8] Some - at times most - of the unemployment in an economy has frictional or structural causes: some labour-force participants deliberately spend time searching for employment (or better employment); the skills or locations of others are mismatched with available vacancies. Thus, macroeconomic policy must accept some rate of unemployment at which the economy can be said to be at 'full employment'.[9]

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[8] For discussion, see Dungan and Wilson (1982).

[9] It is still possible to attack the remaining unemployment through microeconomic policies, such as worker retraining and programs to facilitate the movement of people or jobs.

That rate may, however, be difficult to define exactly; moreover, we now know that it is not constant but varies with demographic factors and institutional factors governing employment and unemployment.

Table 2.3 summarizes our values for past and future 'full-employment' rates.[10] While the actual levels of the rate are open to question and could be as much as one percentage point above those shown in the table, its past and future movement are less debatable. During the 1970s, it rose as much as two percentage points above the rates of the 1960s for three reasons. First, in 1971, the federal government made unemployment insurance benefits significantly easier to receive, a policy change that allowed workers to spend longer searching for jobs and so increased frictional unemployment. Second, the 1970s saw a large portion of the baby-boom generation enter the labour force. The economy could absorb this increased number of new entrants only with a lag; moreover, young labour-force participants always have relatively high unemployment rates, partly for 'job-search' reasons (for the young, the costs of being unemployed are relatively low and the rewards of searching out the best available job can be relatively high). As the proportion of this 'unemployment-prone' group increased in the total labour force, so did the average unemployment rate and the estimated 'full-employment' rate. Third, the increased participation of women in the labour force caught unprepared the traditional structure of labour markets in the 1970s; it has taken time to change attitudes and job structures to accommodate the influx.

To some extent, all these factors are reversed in the 1980s, and the 'full-employment' unemployment rate is projected to fall. Various unemployment insurance provisions have already been tightened, undoing some of the effects of the 1971 reform. The heavy inflow of young workers abates with the passing of the baby-boom into the mature work force. Finally, the workplace is accommodating itself to the availability of more women workers.

This shift can have major implications for macroeconomic policy. During the 1970s the unemployment rate - a politically sensitive number - would have risen under any constant government policy; during the 1980s, its tendency should be downwards, all else equal, giving considerably wider latitude to policymakers.

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[10] These estimates are taken from work by Dungan and Wilson (1982).

Labour productivity

Since 1972, poor productivity growth has clearly been among the major problems of the economies of Canada and much of the rest of the world - or at least a major symptom of their problems.[11] Most notably, poor labour productivity growth leaves no source for real-wage growth save from the shares of the other factors of production - especially capital. The steady growth of the pie in the 1960s and early 1970s may have kept arguments over sharing it from touching off the wage and price inflation afflicting the later 1970s.

As shown in Table 2.3, labour-productivity growth all but disappeared in the 1974-80 period.[12] This study assumes continued zero or negative growth for 1981-2, with a cyclical recovery in 1983. Thereafter, the projection is for positive growth at rates above those of the later 1970s but well below the heights attained in the 1960s and early 1970s.[13]

The alternative assumption of a lower productivity growth could imply a corresponding reduction in the projected level of output - and also in real wages. Therefore, the result might be a combination of somewhat lower output and higher inflation.

Assumptions about national policy stances

In general, policy stances and tools are assumed to remain unchanged, unless stated otherwise. Thus, for example, we assume that the 1980s see no significant increases in barriers to interprovincial trade and movements of capital and labour. (If those barriers do increase, domestic productivity performance would be much reduced, and the outlook for Canada and Ontario significantly worsened.[14])

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[11] For a recent review of productivity and related issues in Canada, see Denny and Fuss (1983).

[12] Note that the measure of productivity used is output per worker, not per hour. Thus, these rates of growth include a negative component for the secular trend downwards in hours worked per week per worker. Note, too, that reductions in labour productivity do not necessarily mean that workers are working less industriously than before. The causes of such drops can be many and varied, including the substitution of labour for capital to save on energy costs and a fall-off in technological innovation or in the rate at which it is embodied in new capital. See Denny and Fuss (1983) for further discussion.

[13] The productivity projections are somewhat below those of the preliminary projections we presented to Outlook and Issues 1981, an Ontario Economic Council conference in October 1981. We are grateful to several conference participants, especially Dr. Dorothy Walters, for their comments on our initial productivity assumptions, although they would not necessarily agree with the revisions shown here.

We also assume that Canada's current restrictive policy mix, like the policy mix of the United States, has no spectacular success or failure. That is, it affects output and inflation much as similar restrictions in the past, even though the present policy mix is somewhat more severe and sustained.[15] For both Canada and the U.S., we assume that the restrictions ease the rate of inflation, but at a cost of lost output, and that the degree of restraint is reduced once policymakers perceive some success.

Moreover, the Canadian future is characterized by somewhat less restriction than the American, giving the former's higher real growth but also its relatively greater inflation. In other words, we assume a continuation of the two countries' relative restrictive stances. We also allow for two sets of special factors. First, we assume that the Canadian economy possesses, as it has in the past, greater growth potential than the American; thus, it is easier for Canada to pursue policies leading to somewhat higher growth. Second, the higher inflation in Canada is seen as the result of three special factors: most importantly, that Canada is still moving up to world oil prices while the U.S. benefits from having already done so; that U.S. trucking and other industries were recently deregulated, leading to highly visible wage rollbacks; and that the U.S. had a greater political consensus in 1981-2, making labour there more willing to accept lower wage increases.

Sometime during the 1980s, Canada may undertake a renewed form of incomes policy, presumably one less crude than a simple wage and price freeze. If such a policy is only moderately binding and successful, it would simply constitute a continuation, by other means, of a policy of moderate restriction. However, an incomes policy that proved either disastrous or highly successful could greatly alter this study's projections.[16]

[14] For a discussion of some issues in the area of interprovincial trade and trade barriers, see Institute for Policy Analysis (forthcoming).

[15] It might be noted that, whether desirable or not, the current policy mix in Canada is more consistent than that in the U.S. Monetary policy is tight and is matched by a relatively tight net fiscal policy (of all levels of government combined), rather than by a policy of expansion, as in the U.S.

[16] For an excellent discussion of past and future policy choices, in the

TABLE 2.4
Assumptions about government expenditures and transfers

	Annual average				
	1962-73	1974-80	1981-3	1984-6	1987-90
Real government expenditures on goods and services					
Growth rate	5.2	1.6	2.1	1.9	2.7
Growth rate less rate of growth of real GNP	-0.6	-1.1	-0.3	-1.5	-0.7
Nominal transfer payments to persons by governments and public pension plans					
Growth rate	12.7	15.4	18.3	12.5	11.8
Inflation (GNP deflator)	3.9	10.0	10.6	8.5	7.6
Real growth rate	8.8	5.4	7.7	4.0	4.2
Growth rate less rate of growth of nominal GNP	2.7	2.4	5.0	0.3	0.4
Federal net intergovernmental transfers (nominal)					
Growth rate	13.1	15.3	13.4	9.3	8.3
Real growth rate	9.2	5.3	2.8	0.8	0.7
Growth rate less rate of growth of nominal GNP	3.1	2.3	0.2	-3.0	-3.1

Table 2.4 summarizes our specific assumptions about policy. Growth in real government expenditure on goods and services is restrained (at all levels of government combined), continuing past policy. As can be seen in the table, the growth in real government expenditures was below GNP growth in both the 1962-73 and the 1974-80 period - as much as a full percentage in the latter.[17]

The growth rate of transfers to persons by all levels of government declined in real terms between the 1962-73 and the 1974-80 period, although the fall is less when measured against the lower GNP growth of the latter period. The projection is for a further decline, both in real terms and as a share of GNP, except during the 1981-3 period, when low growth and high unemployment boost automatic outpayments. The decline in the later 1980s reflects two assumptions: that no new transfer programs are undertaken,

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context of the debate between neo-Keynesians and neoclassicists, see Lipsey (1981).

[17] Note that the concept used is real expenditure on goods and services, which excludes transfer payments of all kinds. Since the latter shift income among persons, they do not represent a claim by government itself on goods and services.

and that a slow but steady improvement in the economy helps to reduce welfare and unemployment insurance payments relative to GNP growth.

Finally, we assume a reversal of the historically upward trend in net federal transfers to other levels of government. Thus, federal net transfers increase only slightly in real terms, and their growth rate is actually less than the growth rate of real GNP. This assumption may be too severe, although the direction of the trend is clear. (Note that the upward trend declined in the 1974-80 period relative to the 1962-73 period.)

Fortunately, the macroeconomic consequences of some alternative assumptions would not be great. So long as the position of all governments combined remains largely unchanged, it is simply a question of which level of government shows more of a deficit or surplus.[18] Of course, if transfers were much larger or smaller, different macroeconomic results could be forthcoming, since one level of government might alter its taxes or expenditures, changing the aggregate.

THE NATIONAL PROJECTION: A DESCRIPTION

Combining and co-ordinating all the assumptions through the FOCUS macroeconomic model yields a detailed projection for the national economy.[19] This section describes and analyses that projection and discusses its consistency and its possible weak spots. Summary tables accompany our commentary in the text. Many rather detailed tables appear at the end of the chapter. We urge readers to use them to draw their own conclusions, which may vary from our analysis.

Overview of the national projection

In general the projection shows the national economy gradually regaining its balance through the operation of its own equilibrating mechanisms - an un-

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[18] Of course, the question can still be very important to individual governments. Note that this study does not attempt to update the work on Ontario revenues and expenditures done in Sawyer, Dungan, and Winder (1978) and Foot et al. (1977).

[19] Notice that the term 'national (or provincial) projection' is used interchangeably with 'base case'. The base case is the projection we present in Chapters 2 and 3. The concept is most useful when analyzing shocks to the economy, as in Chapter 4; the simulation of a shock and a response to it are compared to the base case.

TABLE 2.5
The national economy: summary

	Annual average				
	1962-73	1974-80	1981-3	1984-6	1987-90
Real GNP growth rate	5.8	2.7	2.4	3.5	3.5
Inflation rate	3.9	10.0	10.6	8.5	7.6
Interest rate, industrial bonds	7.3	10.8	15.6	12.8	12.0
Unemployment rate	4.9	7.3	8.0	6.9	6.0
Exchange rate (US$/C$)	0.95	0.93	0.84	0.86	0.87

TABLE 2.6
National performance: Canada and the United States

	Annual average			
	1962-73	1974-80	1981-5	1986-90
Real GNP growth				
Canada	5.8	2.7	2.8	3.5
U.S.	4.2	2.5	2.8	2.9
Inflation rate (GNP deflator)				
Canada	3.9	10.0	9.8	7.8
U.S.	3.6	7.7	8.0	7.0

surprising conclusion since the assumptions include no major disturbances, favourable or unfavourable. A summary of the national projection is given in Table 2.5 (and in greater detail in Table 2.22 at the end of the chapter. Table 2.6 compares Canada and the U.S., while Figures 2.1 to 2.3 plot a selection of key variables against each other and their own past behaviour.

Real growth rises gradually from the low levels of the 1980-2 period and levels off later in the decade at about 3.5 per cent; since this level is probably slightly below potential, it leaves slack for a gradual reduction in inflation.[20] (These points are discussed in somewhat greater detail below). In the early 1980s, real growth is projected to vary little from that in the U.S., partly because U.S. fiscal policy is less restrictive than Canadian fiscal

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[20] The base case presented was developed in February 1982. As this report was being written (April 1982) the National Accounts for the fourth

Figure 2.1
The national economy: summary

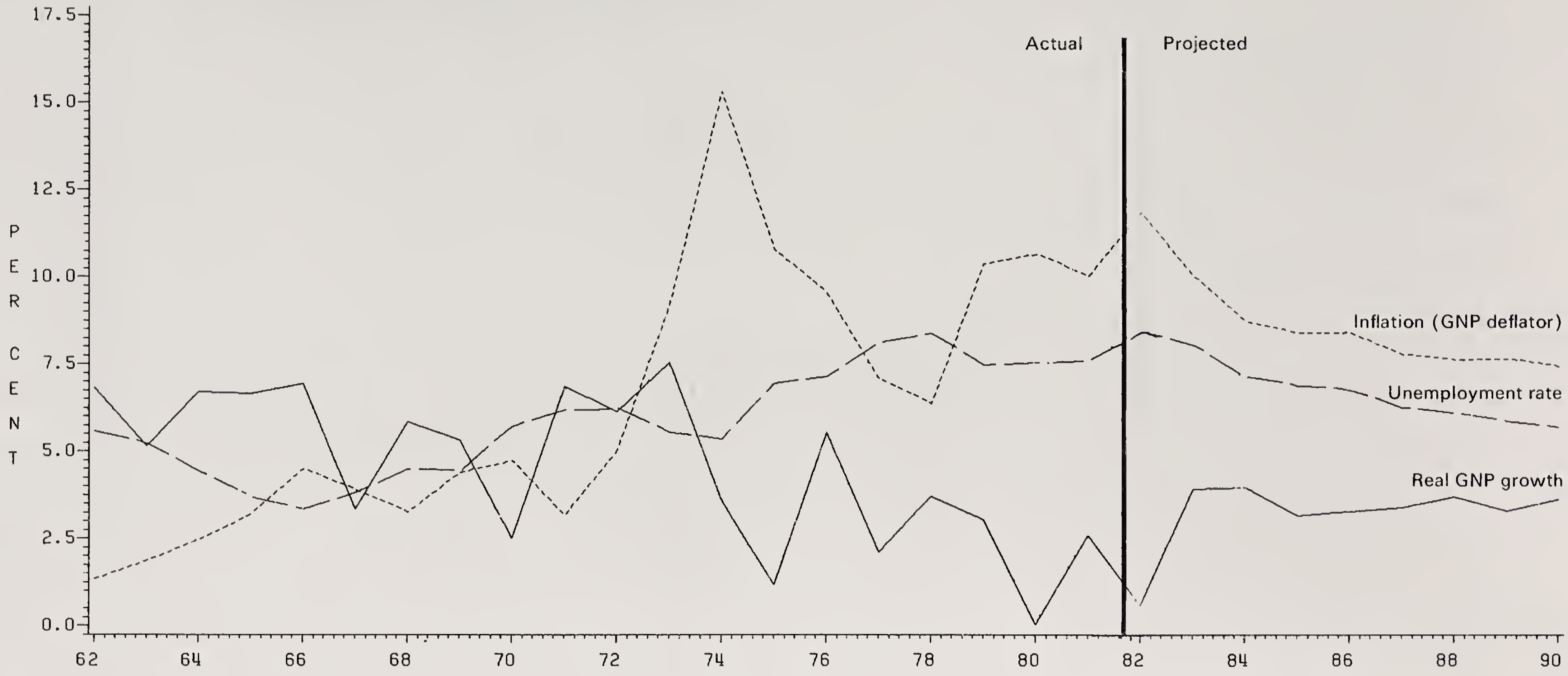


Figure 2.2
Unemployment rates

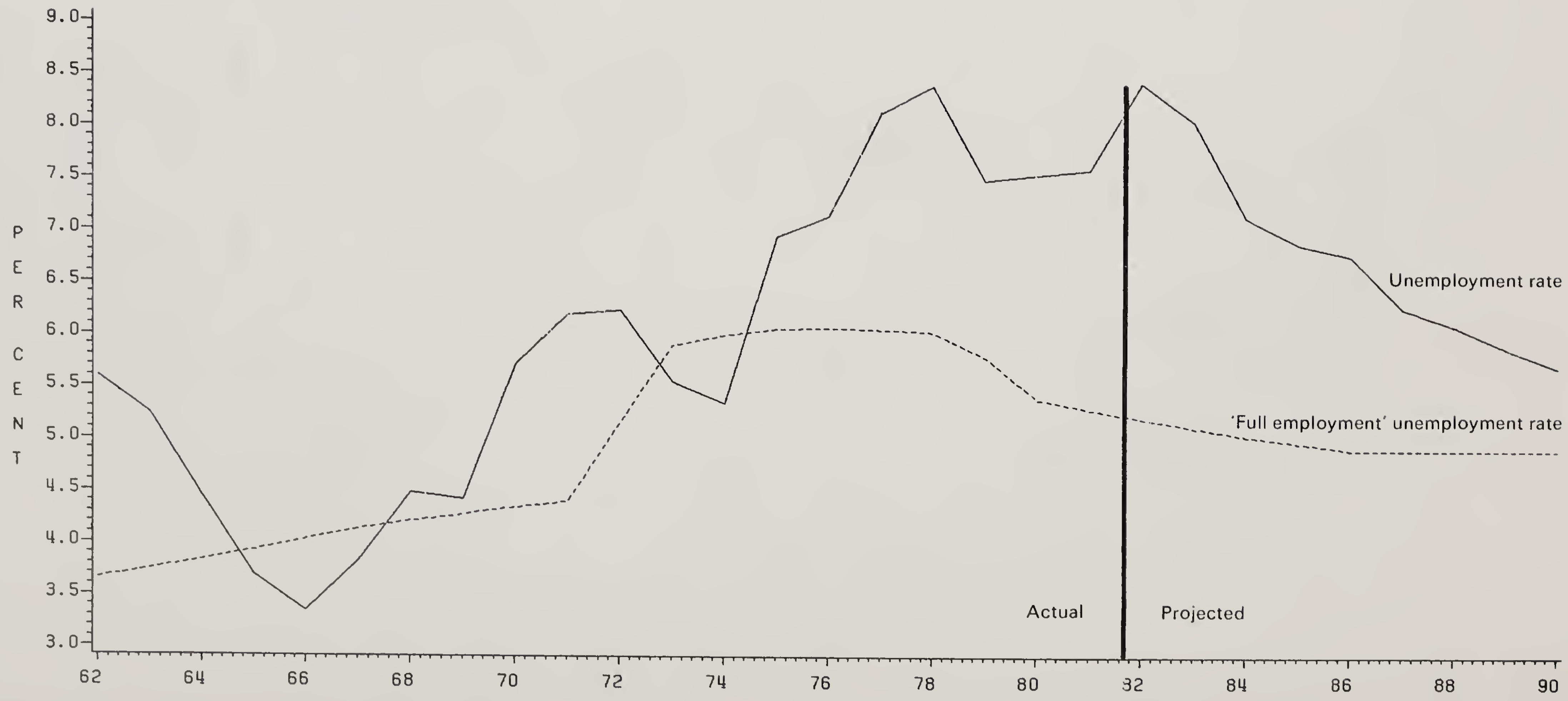
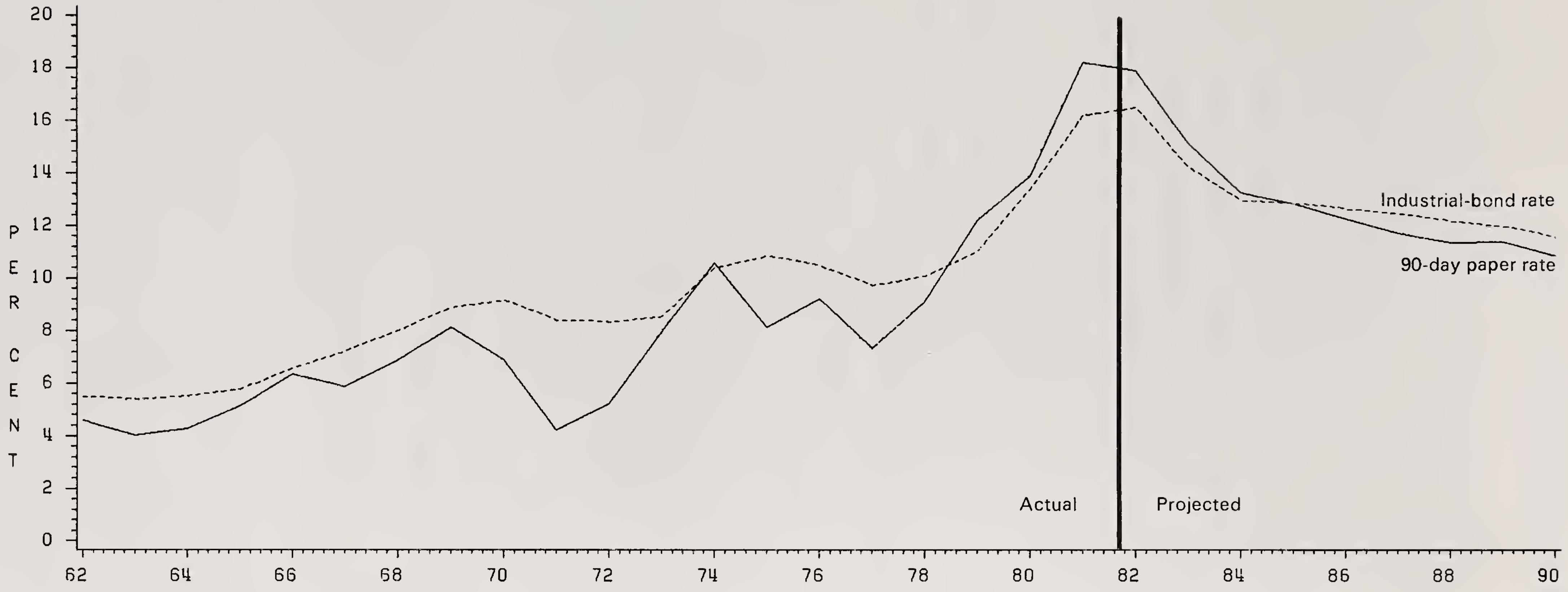


Figure 2.3
Interest rates



policy in the first part of this period, partly because Canada has more inflationary pressures to absorb. In the latter half of the decade, however, the Canadian growth rate returns to its historical position above the United States', because this country has more investment opportunities (largely in resources) to exploit, because our labour-force growth is somewhat higher (partly the result of higher per-capita immigration), and because, as we have seen, Canadian policy leans slightly more than U.S. policy towards real growth and away from anti-inflationary restriction.

Canadian inflation remains above American, repeating the pattern evident in the 1960s and 1970s. The difference is much larger in the early 1980s when, as we have seen, Canada is absorbing energy-price rises and a number of special factors, including deregulation in visible sectors and a high degree of political consensus, are keeping U.S. inflation down. Despite our higher inflation, the Canadian dollar is projected to appreciate slightly as a result of large capital inflows financing major resource projects.[21] Moreover, in the latter half of the decade, the development of alternative petroleum sources and the substitution of alternative fuels (notably natural gas) lead to considerable reduction in petroleum imports. The capital inflows and reduction in petroleum imports combine to offset the adverse impacts of higher Canadian inflation on the balance of payments.

The unemployment rate declines gradually, the 'full-employment' unemployment rate also falls; the projected unemployment rate of 5.7 per cent in 1990 is still above - or at least approximately equal to - the 'full-employment' unemployment rate.

Real and potential growth

Medium- and long-term projection studies can usefully compare real growth

---

quarter of 1981 were released, and the short-term outlook for 1982 had worsened. Our figures for GNP growth for 1981 have turned out a trifle low, and those for 1982 will probably prove rather too high. Any additional worsening in 1982 is likely to be offset by a larger-than-projected rebound in 1983, unless policy continues to be severely restrictive. Readers are reminded again that the focus of this study is the medium term, and that the projected short-run cyclical fluctuations in the first years are only approximations.

[21] Planners should give larger-than-normal error tolerances to projections for the exchange rate. A wide variety of factors can alter them.

TABLE 2.7
Potential GNP: past and projected growth rates

	Annual average		
	1962-73	1974-80	1981-90
Growth in employment at 'full employment'	2.8	3.2	2.3
Growth in capital stock	5.5	5.5	5.9
Total factor productivity growth	1.8	0.5	0.5
Cobb-Douglas weights			
+.65 X labour	1.8	2.1	1.5
+.35 X capital	1.9	1.9	2.1
+ Total factor productivity	1.8	0.5	0.5
= Estimate of potential growth	5.5	4.5	4.1
Real GNP growth	5.8	2.7	3.2

with projected potential growth. The latter is, of course, an estimate - of how much the economy could grow if all its resources were 'fully employed' from year to year - but since it is grounded in the supply side of the economy, it provides a crosscheck on projections of growth and inflation that have been developed with greater attention to aggregate demand.[22]

Table 2.7 presents potential GNP growth rates for the 1960s, 1970s, and 1980s. (It must be stressed that these are very crude estimates. Their sole purpose is to demonstrate that the projections of future growth are not unreasonable on the basis of the past behaviour of the economy or the more solid foundations of demographic projections; neither are they inconsistent with a gradual reduction in the inflation rate.)

The calculation of potential growth depends on three factors: growth in the number of workers available at full employment, in the capital stock, and in a residual component called total factor productivity (not to be confused with labour productivity, which is output per worker or hour). Each element presents difficulties in measurement.

Growth in employment at full employment depends on growth in the labour-force source population, which is relatively easy to measure and to project, and on changes in the 'full-employment' unemployment rate, whose measurement always depends to some extent on judgement. Fortunately, demographics tend to dominate, and the past and projected figures for growth in employment at full employment are the most reliable ones in Table 2.7. Still, movements in the 'full-employment' unemployment rate are important; they tend to offset the demographic rise in 1971-80 and mitigate the downswing in labour-force growth in the 1980s.[23]

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[22] For recent discussions of the concept of potential GNP, see Dungan and Wilson (1982) and Carmichael (1979).

As shown in Figure 2.4, capital formation is clearly the main contributor to potential growth in the 1980s, with the rate of capital accumulation exceeding that of the earlier decades. Yet the exact contributions of labour and of capital to growth cannot be certain. Growth in the capital stock must, to some extent, be surmised from base-case investment flows, allowing for a constant depreciation rate. And it has been suggested that many investors in energy-intensive capital accelerated depreciation during the 1970s in the face of higher energy prices, a practice that would tend to reduce the estimates of the contribution of capital to potential growth.

The concept of total factor productivity is an attempt to account for the contribution of technical change and of institutional and other factors to potential growth.[24] Most researchers now recognize that this source of growth declined sharply between the 1962-73 and the 1974-80 period,[25] although the source of that decline is still a subject of debate, and a conservative estimate projects the low rate to continue through the 1980s.[26] The fall-off may include the already mentioned effects of the enhanced depreciation of capital; if so, the contribution of capital is overstated and that of total factor productivity understated.

Because of the difficulties of measurement, it is not completely clear how the two major components of growth - capital and labour - should be combined to obtain an estimate of potential GNP growth. The most common method uses weights obtained from relative income shares in the economy (often imposed to produce a Cobb-Douglas production function). Using this method yields

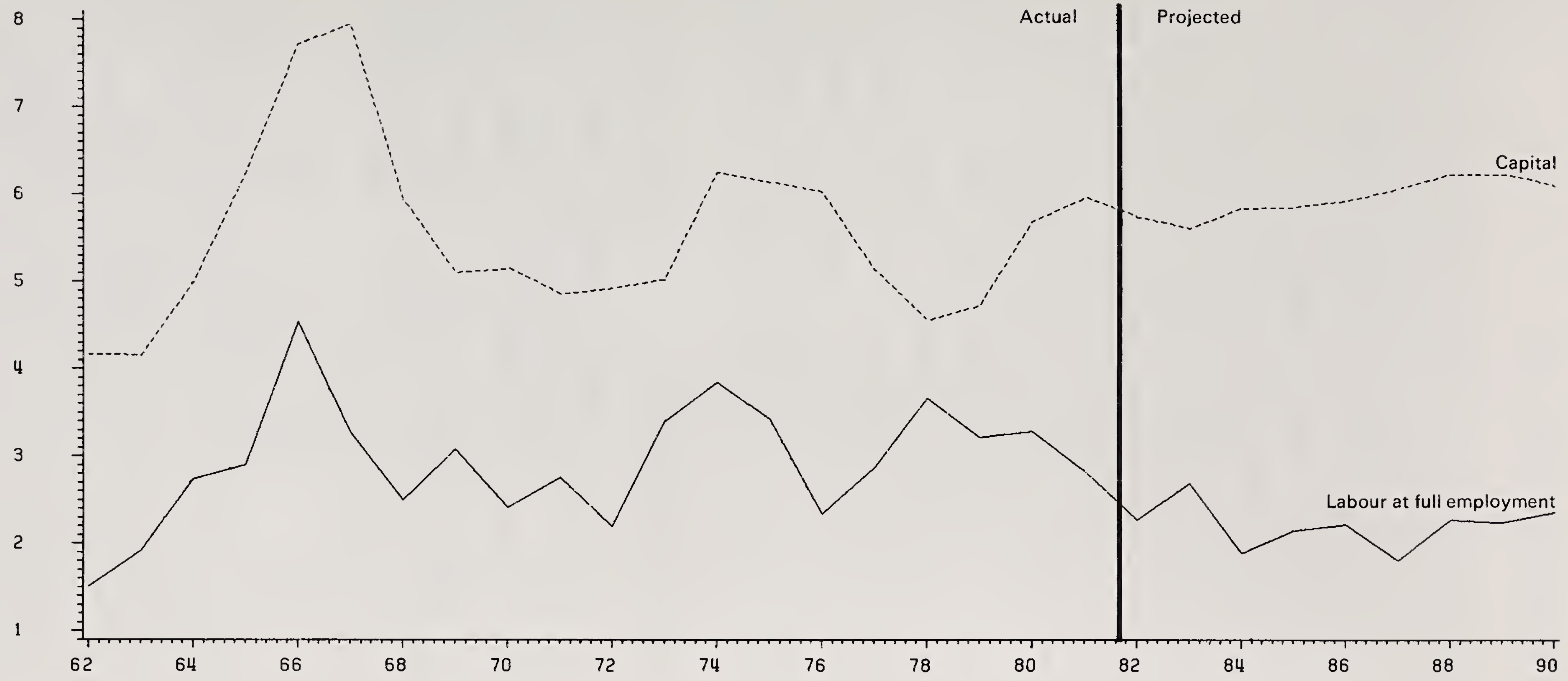
[23] The measure used for employment at full employment does not attempt to account for the discouraged worker effect; that is, if the economy runs at full employment during the 1980s, many 'discouraged' workers might be tempted to re-enter the labour force, increasing the economy's potential.

[24] For a discussion of this and other concepts related to productivity, see Denny and Fuss (1983).

[25] Estimates for the two historical subperiods are taken from Dungan and Wilson (1982) and the FOCUS model, which yield very similar results.

[26] The Conference Board of Canada (1981a; 1981b) is among those who have adopted this estimate.

Figure 2.4
Sources of potential growth (growth rates of capital and labour at full employment)



estimates of potential GNP which, as shown in Table 2.7, suggest that, on average, the economy was operating at, or even above, potential in 1962-73 but well below it in 1974-80. The latter period was, of course, a time when many western nations were attempting to keep considerable slack in their economies to fight external inflationary shocks and their reverberations through increased inflationary expectations.

For the 1981-90 period, the same calculation obtains an estimate of 4.1 per cent for annual potential growth, a rate that is slightly below the average for 1974-80 and that declines steadily in the latter half of the decade. The estimate may be somewhat high in that it depends heavily on the growth of capital and a large portion of the decade's investment is projected to concentrate on large-scale resource-extraction projects, which may well contribute less to potential growth than capital investment has in the past, especially in the 1960s. (However, this effect is captured, to some extent, by the low projected growth in total factor productivity.) But even if the projection of potential growth is somewhat optimistic, it indicates that the basic projection for GNP growth is not only feasible but allows for enough slack in the economy to decrease the rate of inflation gradually.[27]

The components of real GNP

One must examine the various expenditure categories of real GNP, both to check the sources of demand-side growth in the economy and to ascertain the expenditure components that affect the projections for different industries and for the province of Ontario. Table 2.8 summarizes growth rates by expenditure components, while Table 2.9 and Figure 2.5 show the changing shares of the various components over time. Table 2.23, at the end of chapter, details year-by-year projections.

[27] In one version of the FOCUS model, the production function is estimated under the assumption that some labour and machinery and equipment are overhead to plant-in-place. Under this formulation, the weights for the contributions to growth used in Table 2.7 are almost exactly reversed, with capital receiving a weight of 0.63. If these weights are more accurate, then the potential growth rate in the 1980s would not decline as much as shown in the table, since the major source of decline there is the lower growth rate of the labour component. If this component has a lower weight, potential growth could be as much as 5 per cent in the 1981-90 period. This alternative calculation is, however, highly tentative.

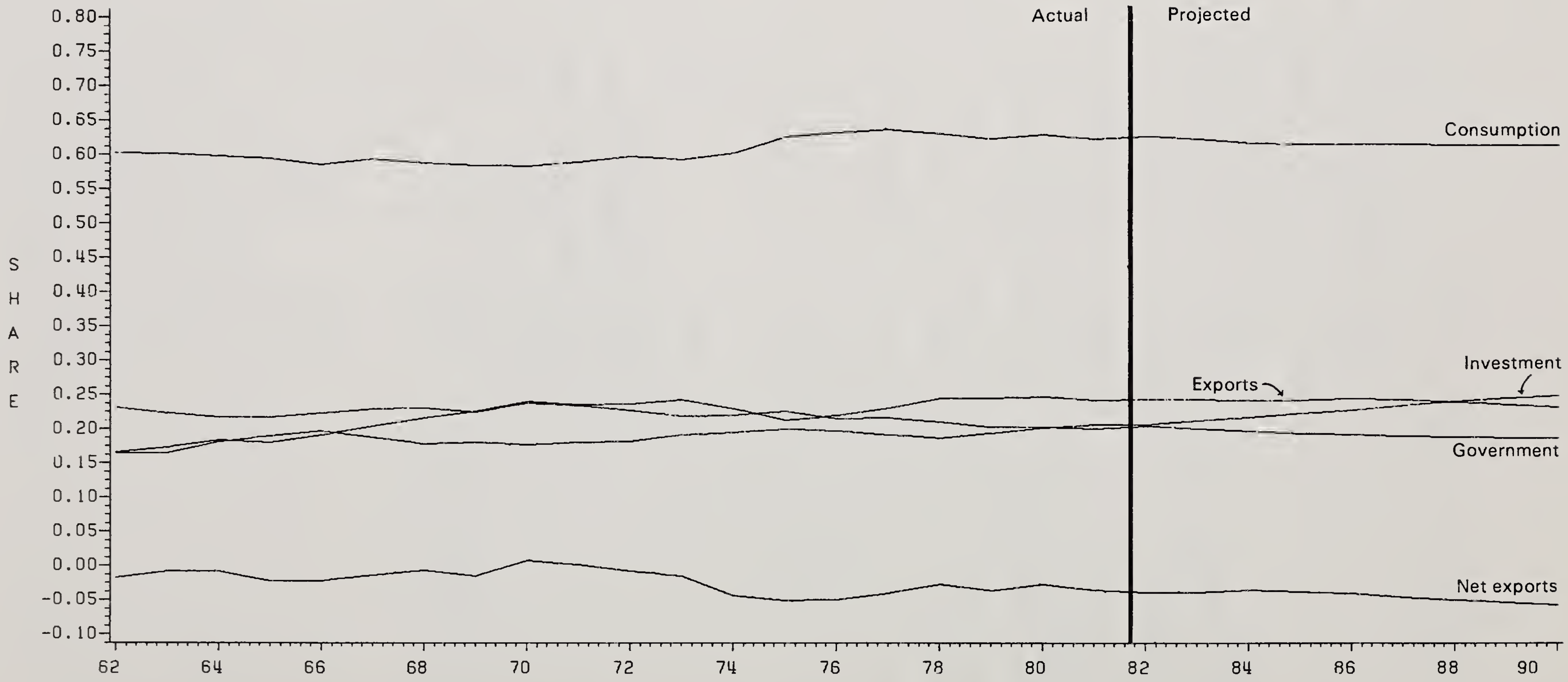
TABLE 2.8
Major components of Real GNP: summary

	Annual average growth rate				
	1961-73	1974-80	1981-3	1984-6	1987-90
Consumption	5.5	3.6	2.0	3.1	3.4
Consumer durables - autos	9.7	1.7	0.6	4.5	2.9
Consumer durables (except autos)	9.5	4.8	3.0	3.8	5.2
Investment (private)	6.9	3.5	4.1	5.9	5.9
Residential	7.7	-2.3	1.2	2.5	1.5
Nonresidential structures	4.6	6.6	5.4	6.9	6.3
Machinery and equipment	9.1	4.8	4.3	6.3	7.1
Government (current and capital	5.2	1.6	2.1	1.9	2.8
Exports	9.0	3.1	2.0	3.5	2.3
Imports	8.5	3.7	3.4	3.8	3.9

TABLE 2.9
Shares of GNP by expenditure category

	Annual average shares				
	1961-73	1974-80	1981-3	1984-6	1987-90
Consumption	0.59	0.63	0.62	0.62	0.61
Consumer durables - autos	0.032	0.036	0.031	0.032	0.032
Consumer durables (except autos)	0.051	0.073	0.077	0.078	0.082
Investment (private)	0.18	0.20	0.21	0.22	0.24
Residential	0.048	0.048	0.037	0.037	0.034
Nonresidential structures	0.066	0.066	0.081	0.088	0.099
Machinery and equipment	0.068	0.081	0.091	0.098	0.111
Government (current and capital	0.23	0.21	0.20	0.19	0.19
Exports	0.21	0.23	0.24	0.24	0.24
Imports	0.22	0.27	0.28	0.28	0.29

Figure 2.5
Shares of expenditure components



The demand-side sources of growth in the 1962-74 period were broad based, led by exports and investment (both residential and nonresidential) and closely followed by consumption (especially of durables) and government. In the 1974-80 period, demand was maintained by nonresidential investment and consumption of durable goods, except automobiles. Exports grew faster than real GNP, but imports outpaced them; the contribution of net exports, therefore, turned negative.

By contrast, nonresidential investment is projected to lead growth in the 1980s. Consumption keeps somewhat behind real growth, as would be expected. Durable goods, including automobiles, make some recovery, although auto consumption never comes close to the heights of 1962-74. In the mid-1980s, residential investment has a partial recovery, based on the release of pent-up demand, but the passing of the baby boom means, to some extent, the passing of the housing boom. Only a major rise in net migration within Canada (which is not projected in the base case) could lead to significantly greater residential investment activity. Net exports continue a negative contribution in real terms; however, the terms of trade show an upward trend, which means that the continued growth of imports over exports does not have serious implications for the balance of payments.

Thus, nonresidential investment is left as virtually the sole 'engine of growth' on the demand side in the 1980s. The preceding two decades did not see demand growth so concentrated in a single category, and the outlook for the 1980s is, therefore, more precarious than it would be if the growth projection were more broadly based. A major faltering in investment prospects could cause a significant downturn unless other demand categories, such as consumption or net exports, were boosted. Another alternative, of course, would be less of the envisaged investment being undertaken by private corporations and more by Crown corporations or by governments themselves. Such a switch would leave most elements of the macroeconomic projection unchanged.

Particularly significant for Ontario in this analysis are the high growth rates projected for investment in machinery and equipment (of which Ontario is a major supplier in Canada), as well as the falls in net exports and in government (Ontario has a higher-than-average share of more vulnerable exporting and import-competing firms and, given the presence of the national capital, of government).

TABLE 2.10
Inflation, unemployment, productivity, and real incomes

	Annual average				
	1962-73	1974-80	1981-3	1984-6	1987-90
Actual (or estimated) unemployment rate	4.9	7.3	8.0	6.9	6.0
'Full-employment' unemployment rate	4.3	5.9	5.2	5.0	4.8
Inflation rate (GNP deflator)	3.9	10.0	10.6	8.5	7.9
Inflation Rate - CPI	3.5	9.3	11.5	8.8	7.9
Productivity growth (GDP/employee)	2.5	0.1	0.1	1.2	1.0
Growth rate					
Real compensation per employed person[a]					
adjusted by GNP deflator	2.7	-0.3	-1.7	-0.5	0.3
adjusted by CPI	3.1	0.3	-2.4	-0.8	0.1
Real personal income per employed person					
adjusted by GNP deflator	3.0	0.4	-.5	-.2	0.4

a Compensation defined as wages, salaries, supplementary labour income and the income of unincorporated enterprises (farm and nonfarm).

Inflation and unemployment

Past and projected inflation and unemployment are compared in Table 2.10 and Figures 2.1 and 2.2. A useful benchmark for examining inflation and unemployment is the 'full-employment' unemployment rate already described.[28] More important than this rate's level is its relative movement against the projected (or actual) unemployment rate. Clearly, the 1962-73 period was near or even above 'full-employment' while 1974-80 was a time of labour-market slack, perhaps of considerable slack. During the latter period, the pressure of unemployment doubtless helped to keep the inflation rate lower than it might have been, but the sources of inflationary acceleration were outside the labour market itself.[29] The 'full-employment' rate is projected to slightly decline during the 1980s, yet, at least in the early part of the decade, the measured rate is quite high. This situation suggests the presence of greater slack in labour markets than in the 1974-80 period, and the inflation reduction that is projected to begin in the early 1980s, along with corresponding inflation reduction, by the same method, in the U.S.

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[28] As we have noted, the actual level of this rate is difficult to determine and subject to much judgement. The estimate used here, based on work by Dungan and Wilson (1982), is conservatively low, and could perhaps be one-half to one percentage point higher (although the latter would imply that 'full-employment' meant a nearly 7 per cent unemployment rate in the 1974-80 period).

Labour market slack is reduced in the later 1980s but not eliminated - even if one assumes a 'full-employment' unemployment rate that is considerably higher than the one we use. Thus the rate of inflation continues to fall, but more slowly than in the early years of the decade.

Table 2.10 also summarizes inflation as measured by the Consumer Price Index (CPI). This rate is projected to rise rather quickly in the 1981-3 period, mostly because of the pass-through of higher energy prices; then it falls with the inflation rate as measured by the GNP deflator. Notice, however, that CPI inflation remains somewhat above GNP-deflator inflation, a slightly suspicious result that should perhaps be discounted.

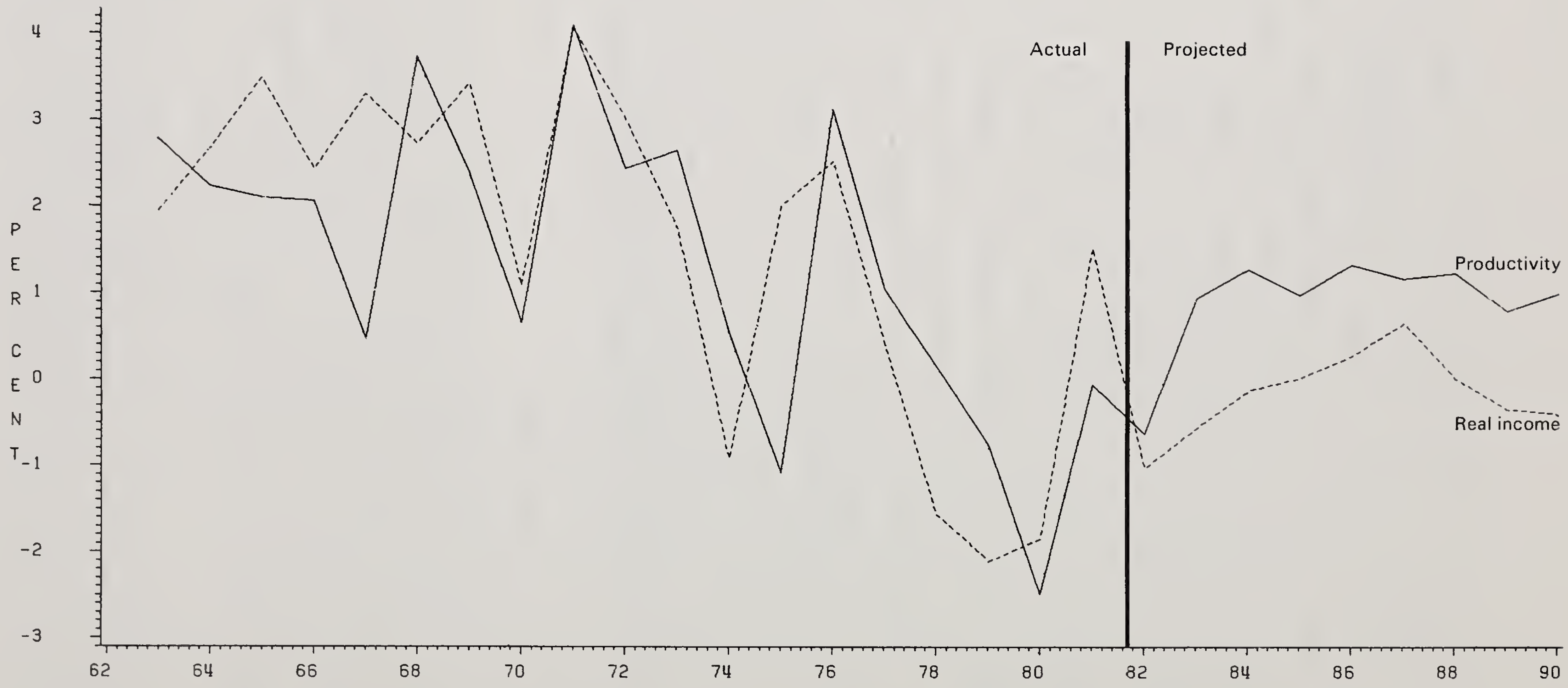
At the end of the chapter, Table 2.24 gives detail on deflators for the major components of GNP; they have not been as carefully developed as the GNP aggregate deflator and should be used with care. Table 2.25 gives the labour-market details that underlie the unemployment-rate estimates.

Productivity and real incomes

As already mentioned in the discussion of assumptions, the projection includes a modest rally in labour productivity once the economy emerges from its cyclical trough of 1981-2 and there is some recovery from the disturbances of the 1974-80 period (see Figure 2.6 and Table 2.10). The middle-to-late 1980s reach a productivity growth rate of a little over 1 per cent annually, still well below the rate achieved in 1962-73.

[29] The estimate of the 'full-employment' rate is intended as an approximation of the rate at which the labour market would not, _of itself_, cause the inflation rate to accelerate or decelerate. This is not to say that the inflation rate could not be accelerated by shocks from outside the labour market, which policy might then fight by inducing labour-market slack. Some higher estimates of 'full-employment' unemployment rates have implictly included this slack.

Figure 2.6
Growth of productivity and real incomes



The last three lines of Table 2.10 give three estimates of the growth of real income per employee - no one definition is completely satisfactory - and Table 2.26 at the end of the chapter gives greater detail on national and personal incomes. During the 1962-73 period, real income growth was above productivity growth, marking something of an income shift to labour and perhaps fuelling the beginnings of inflation, but during the 1974-80 period, the growth of both productivity and real incomes was low. The projection for 1982-3 is a major squeeze, with real incomes falling by all measures, while productivity remains more or less constant. The consequences of a continued, though less severe, anti-inflation push in the later 1980s are seen in the projection of real income growth continuing to lag behind productivity.

These results may be a trifle oversevere; some additional real income gains could be projected without making the inflation estimates inconsistent. It is also important to note that low, even negative, real income growth per employee does not necessarily mean that present employees face a time of no gains. Over the decade, new members join the ranks of the employed (thus the unemployment rate falls), but many of the new jobs are relatively low-paying and, as we shall see, in the service sector. These pull average real incomes down to the point of little or no growth. There remains considerable room for income gains in the sectors of higher productivity.

Financial markets

The key financial variables of the projection are summarized in Table 2.11 and given in year-by-year detail in Table 2.27; Figures 2.7 and 2.8 plot the growth rates and velocities of the money supply, defined as M1 and M2. The money market presents major problems for projection because historical relationships have broken down in recent years, altering it in fundamental ways. Consequently, we concentrate on interest-rate movements and pay less attention to growth projections for the money supply, especially for narrowly defined money, M1.

The assumption is that M1 growth rises back within the Bank of Canada's target bands by 1982 and grows at 5 to 6 per cent per year through the rest of the decade. However, the results for real growth and inflation imply that the velocity of M1 (the ratio of nominal GNP to the M1 stock) must grow considerably faster through the decade. This only continues past trends; under increased inflation and interest rates, the velocity of M1 has

TABLE 2.11
Financial variables: summary

	Annual average				
	1962-73	1974-80	1981-3	1984-6	1987-90
Inflation rate (GNP deflator)	3.9	10.0	10.6	8.5	7.6
Velocity					
Nominal GNP/M1	8.4	10.6	13.7	16.7	20.7
Nominal GNP/M2	2.9	2.5	2.3	2.4	2.4
Interest Rate					
90-day finance company paper	5.8	10.0	17.0	12.8	11.3
Industrial bonds	7.3	10.8	15.6	12.8	12.0
Real 3-to-5 year government bond rate[a]	2.0	.4	5.0	3.5	3.7
Real internal after-tax rate of return on new investment	10.5	6.4	4.1	5.4	6.3

[a] Real interest rate, defined as nominal rate less expected inflation (as determined in FOCUS model), rather than realized inflation.

risen 7.4 in 1962 to about 13 in 1981. We assume that further money market advances continue to allow individuals and firms to economize on their holdings of M1, avoiding a sustained period of low growth caused by credit restriction. However, we also assume that M2, the more broadly defined money supply, continues to grow at rates considerably above those of M1. Velocity for M2 is projected to remain fairly constant at past levels.

A major alternative to this projection is the continued increase of M1 velocity becoming impossible. In this case, for the Bank of Canada to let M1 grow at its target rate would require lower inflation or lower real growth - most likely, a combination of both - throughout the decade. Monetary tightness resulting in continued real-growth stagnation could also lead to the adoption of higher growth targets for M1; in that case, the projections here could be realized, but at lower M1 velocities.

Tables 2.11 and 2.27 also show past and projected levels of real interest rates and real rates of return, which are shown graphically in Figure 2.9.[30]

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[30] In FOCUS, the real interest rate is the traditional definition: nominal rate less the expected, not the realized, rate of inflation. The real rate of return is an approximation constructed by the model relating net earnings from new investment and initial costs.

Figure 2.7
The money supply and GNP: growth rates

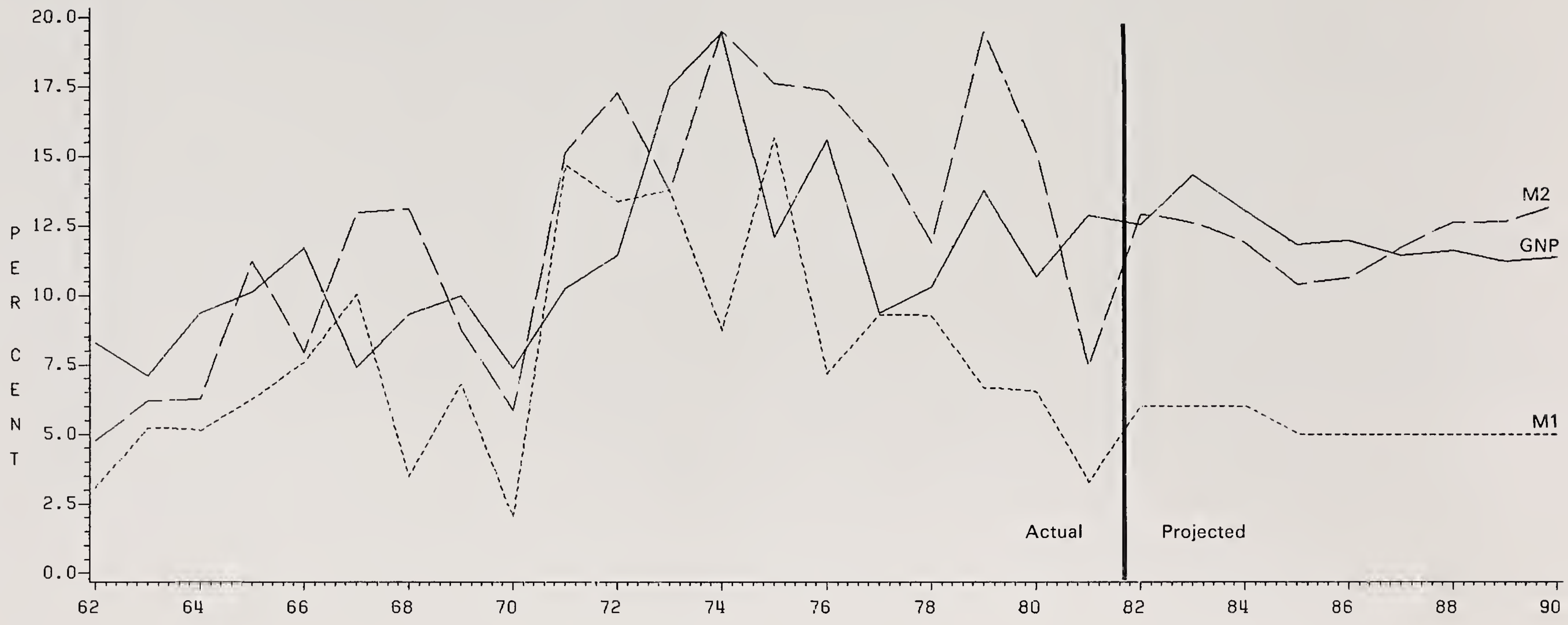


Figure 2.8
Velocity of money supply

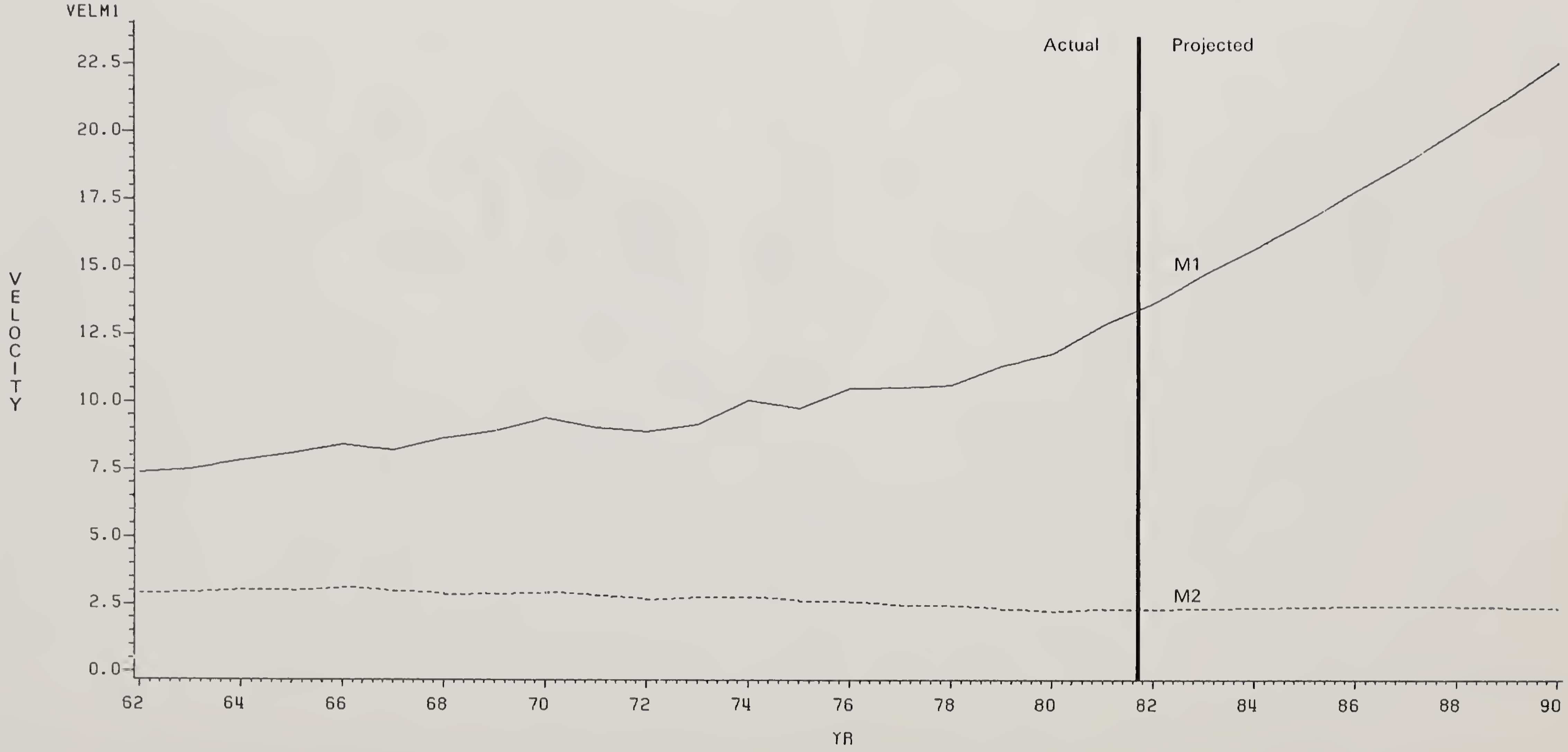
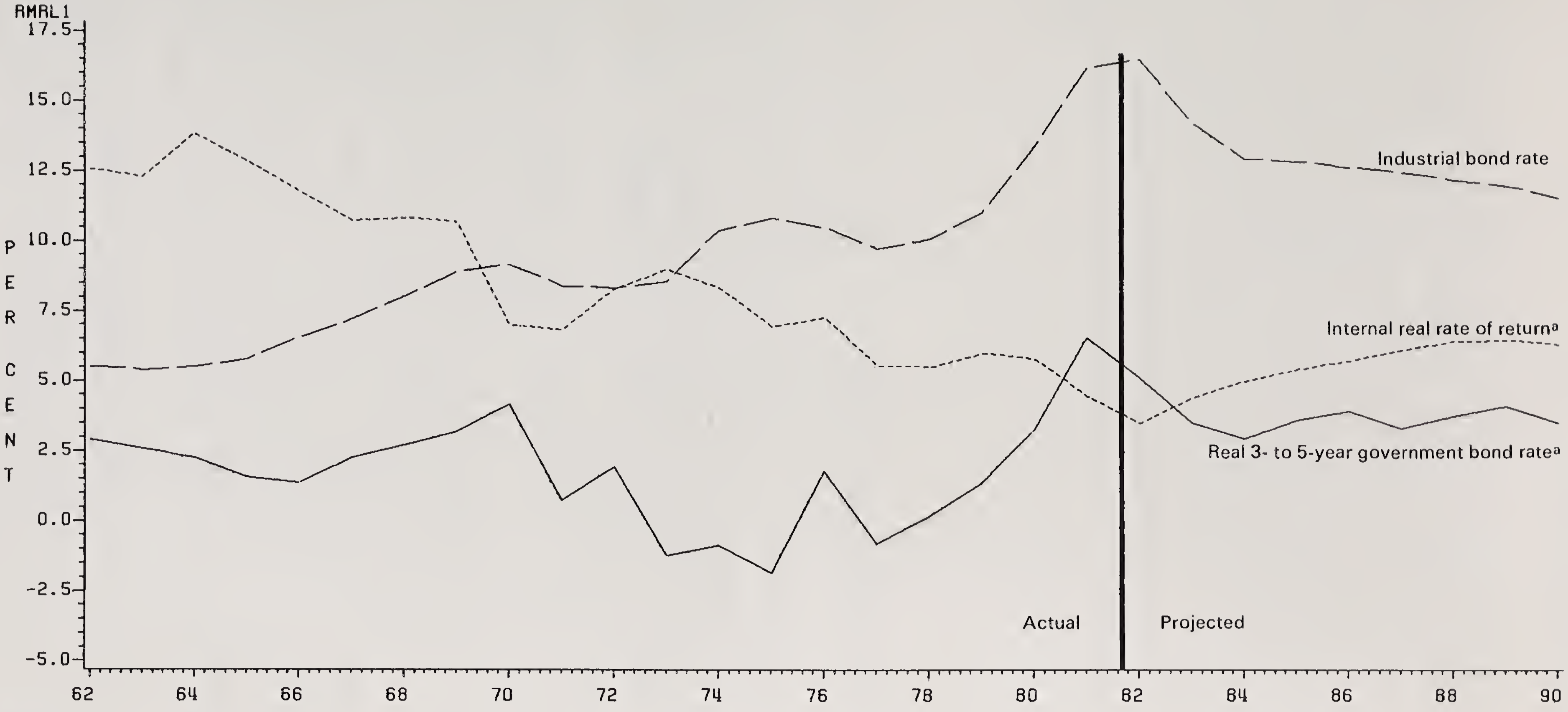


Figure 2.9
Real interest rates and rates of return



[a] Estimated.

Real rates fell quite low during the inflation rise of the 1970s, but then they soared to quite high levels in the early 1980s. They are projected to decline, but to levels still somewhat above those of the 1962-73 period. Meanwhile, the real internal rate of return (which is only a rough estimate) recovers from its current low levels, leaving a differential between the rate of return and real borrowing costs that is a stimulus to investment. However, this incentive alone is insufficient to explain the extent of investment projected to lead growth in the 1980s. At least some of the decade's investment must be for extraordinary reasons - for resource development, whose rewards cannot be factored into the rate-of-return variable, and for the preservation of particular industries or sectors - that do not always lead to classical profit-maximizing behaviour.

Savings

Sources and disposition of savings

Since capital formation is projected to play the leading role in growth in the 1980s, an examination of the financing of this investment is even more important than usual. Table 2.12 and Figure 2.10 show the components of total savings in historical figures and projected values; Table 2.28 presents more detailed projections.

As the tables demonstrate, the principal sources of savings changed considerably from one historical reference period to the next. The projection for the 1980s has most of the sources of savings returning to relative shares that are closer to those of 1961-73 than to those of the latter period. For example, personal saving rose considerably in 1974-80; recent work (Jump, 1980, and others) suggests that part of this shift was caused by the acceleration of inflation.[31] No doubt, some also resulted from the various tax incentives favouring saving that were introduced during this period. In the projections, the importance of personal saving decreases somewhat, partly because income growth is relatively low and partly because the personal sav-

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[31] In fact, some writers also suggest that some of this measured increase is spurious, an attempt by households to preserve their real asset levels. By the same token, it is suggested that some government and corporate dissavings and some additional saving from the foreign sector is also spurious in that these movements represent no 'real' change in asset or liability accumulation.

TABLE 2.12
Sources of savings (percentage shares of gross domestic capital formation): summary

	Annual average				
	1961-73	1974-80	1981-3	1984-6	1987-90
Personal saving	18	28	24	21	21
Undistributed corporate profits	18	23	22	23	23
Public sector surplus (+) or deficit (-)	2	- 8	- 3	0	3
Current account deficit (+) or surplus (-)	2	7	8	4	2
Capital consumption allowances	43	40	38	36	37
Inventory valuation adjustment	- 3	- 9	- 7	- 3	- 4
All other[a]	20	19	18	19	18

[a] Includes government capital formation, profits of government enterprises, capital assistance, and net transfers on current account.

ings rate falls as inflation abates (see Table 2.26).

The public sector[32] moved from being a small contributor to saving in 1962-73 to a position of net dissaving in 1974-80, a change of 10 percentage points that was almost fully offset by the increase in personal saving. The movement is projected to reverse in the 1980s as both federal and provincial government seek nondeficit positions; by the end of the decade the public sector is once more a net source of savings.

By contrast, the foreign sector increased its importance as a source of savings during the 1974-80 period. Its importance persists in the early 1980s, then gradually recedes to levels closer to the 1963-74 period.

Often neglected in the discussions of saving are the major contributions of capital consumption allowances and of the inventory valuation adjustment, although the former is the largest single source of gross savings. During 1974-80, the net contribution of the two items fell considerably compared to the previous period. Again, accelerated inflation was probably the cause, since capital consumption allowances are generally computed at historical cost, not inflated replacement cost. In the 1980s, as inflation abates, the share of

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[32] Here measured by the public sector's deficit/surplus, not as public-sector saving.

Figure 2.10
Components of savings

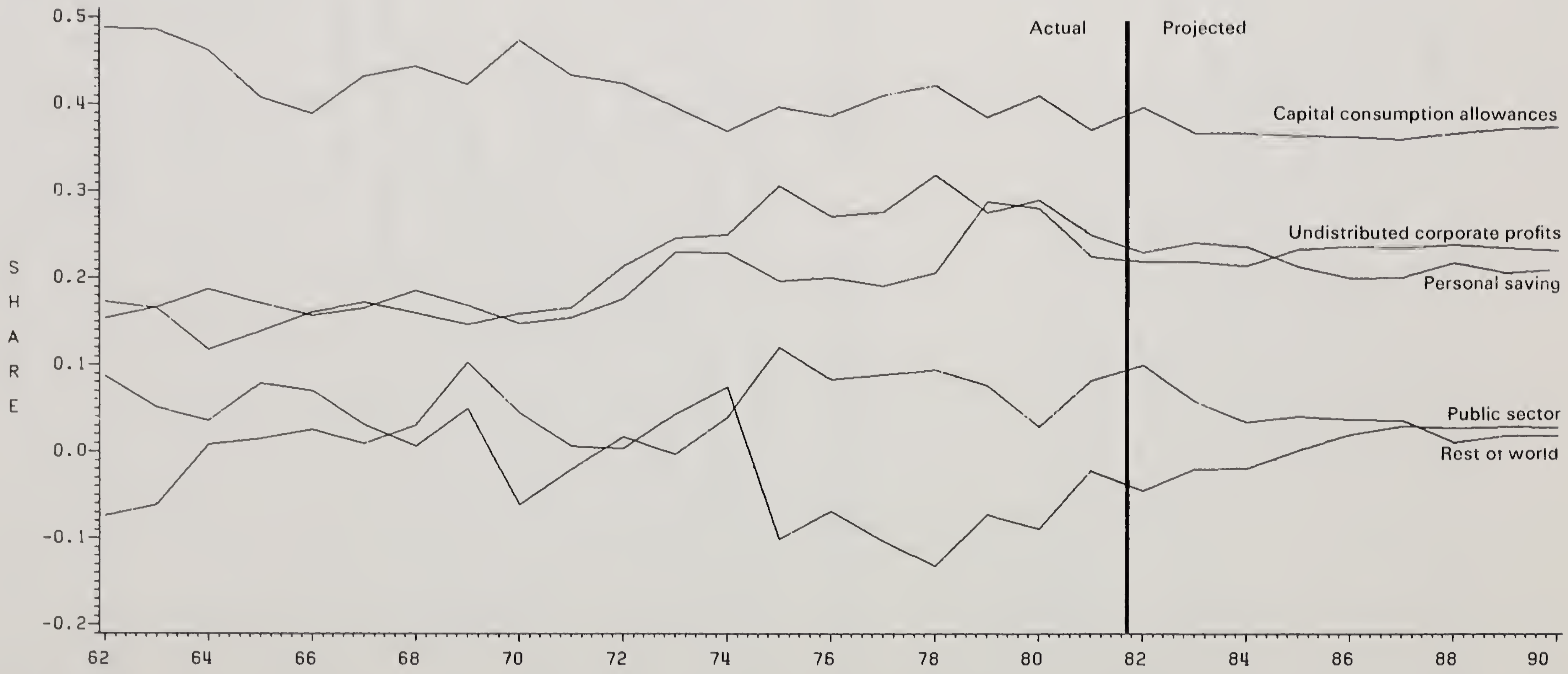


TABLE 2.13
Government balances: summary

	Annual average				
	1961-73	1974-80	1981-3	1984-6	1987-90
Surplus or deficit ($ millions)					
Total	353	-3873	-2638	334	6055
Federal	100	-6279	-7169	-4462	365
Provincial	-164	1	1358	1373	1917
Other[a]	417	2406	3173	3423	3773
Nominal GNP ($ billions)	74	214	372	534	785
Surplus or deficit (% of GNP)[b]					
Total	0.5	-1.8	-0.7	0.1	0.8
Federal	0.1	-2.9	-1.9	-0.8	0.0
Provincial	-0.2	0.0	0.4	0.3	0.2
Other[a]	0.6	1.1	0.9	0.6	0.5

a Includes local government, hospitals, and the public pension plans.
b Detail may not add to total because of rounding.

capital consumption allowances levels off. However, it does not climb back to the heights of the 1960s; inflation remains above 1962-73 rates, so historical costs still trail behind replacement costs.

Government balances

The past and projected behaviour of the government balances is summarized in Table 2.13 and Figures 2.11 and 2.12; at the end of the chapter, Table 2.29 gives year-by-year details, and Tables 2.30 and 2.31 give expenditures and revenues for the federal and provincial governments. The last two should be examined with caution, since the projection concentrated more on aggregate figures than on their detailed components. Indeed, even the aggregate balances must be considered looser-than-usual approximations since government balances, as residual items, are subject to considerable change by slight alterations in assumptions.

The projected pattern, however, is quite clear: the aggregate government balance moves into considerable surplus (0.8 per cent of GNP in the last four years of the decade). This movement is largely the result of a shift in

Figure 2.11
Government balances

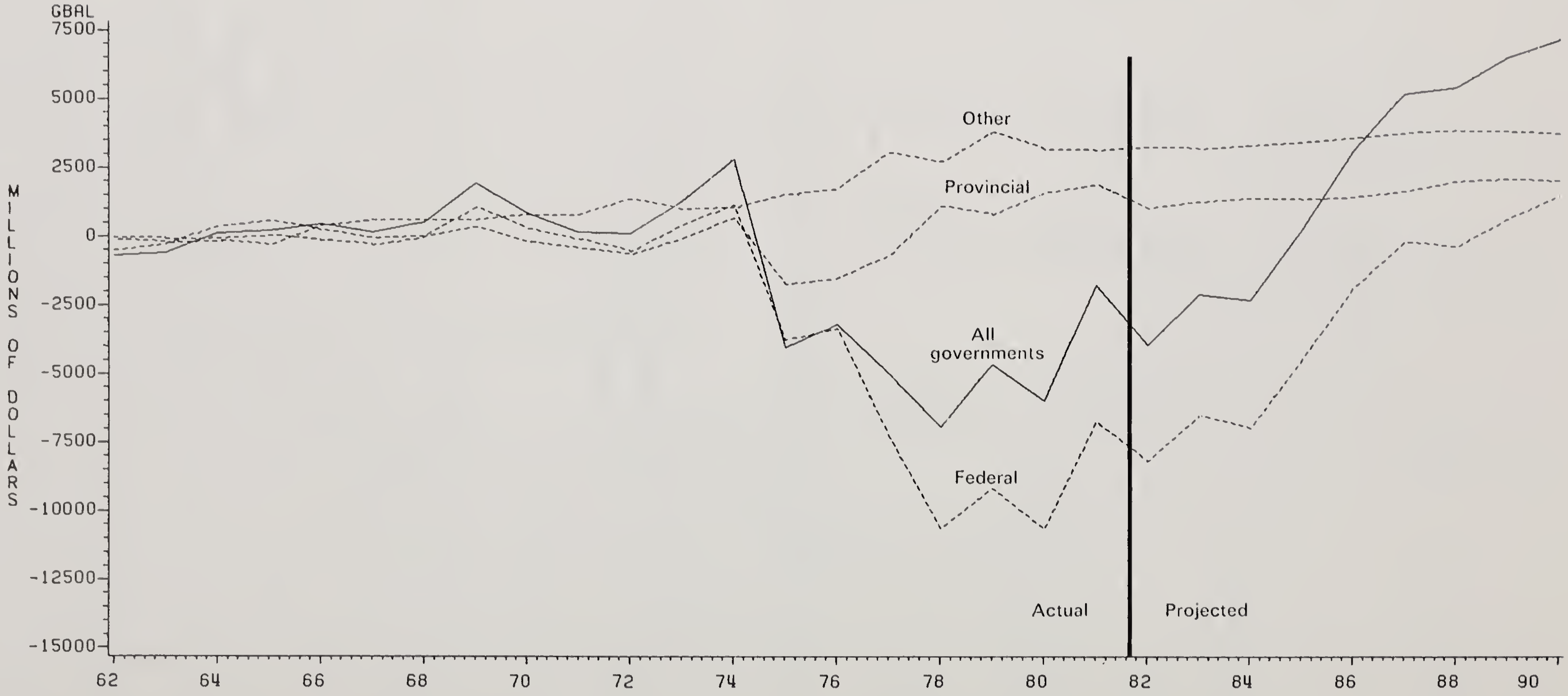
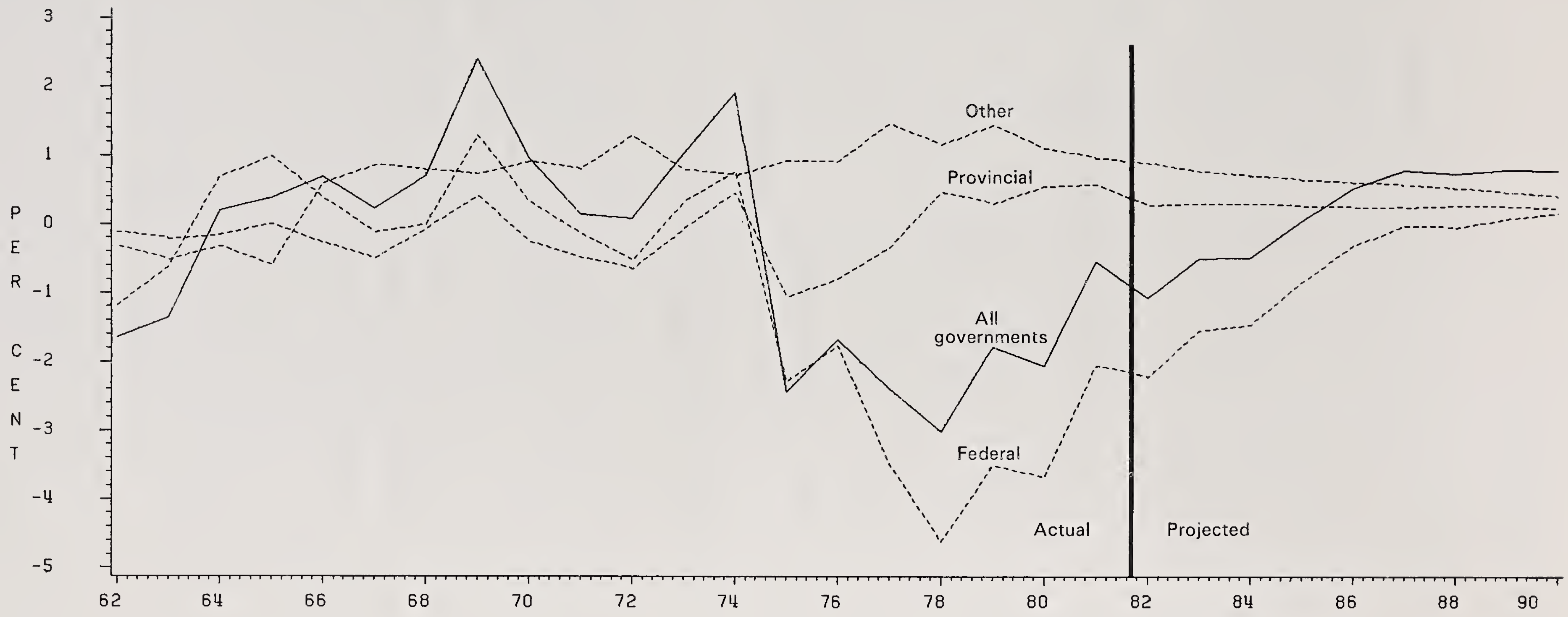


Figure 2.12
Government balances as percentages of GNP



the federal position from a considerable deficit in 1974-80 and 1981-83 to a small surplus at the very end of the decade. Meanwhile, the provinces overall retain a modest net surplus, although it is, of course, unevenly spread among them. However, the size of the provinces' surplus relative to GNP declines somewhat over the 1980s. Finally, the 'other' category (principally the public pension plans) also maintains its surplus, although the ratio of the pension plans' surplus to GNP also declines because of increased pay-outs in the 1980s.

The projected reduction in the aggregate deficit has two causes. First, taxation on and royalties from petroleum and natural gas increase revenues at a number of sources. Second, the 1980s are a period of sustained, if modest, growth combined with continued, but not severe, restraint in government expenditure. Thus, over the decade, tax revenues grow gradually faster than expenditures, and a slow transfer to surplus results.

An additional factor affecting the federal position is a considerable projected reduction in the growth of net transfers to the provinces. The overall provincial position remains in net surplus, but considerable fiscal difficulties may arise for particular provinces.

Balance of payments and exchange rate

The projections show a very gradual rise in the exchange rate[33] and an improvement in balance of payments. Table 2.14 and Figures 2.13 and 2.14 show these changes in summary; Table 2.32 details them.

The shift in the balance of payments has a number of movements underlying it. As we have seen, the balance of real exports and imports is not an engine of growth; rather, real export growth is kept low by the Canadian inflation rate's exceeding the American and by the gradual appreciation of the Canadian dollar. However, a significant upward movement is projected in the terms of trade (the ratio of average export prices to average import prices) because of the sizeable reduction in one very high-priced import - petroleum. At the same time, Canadian oil and gas exports are projected to remain high and even to increase slightly. Thus, the terms of trade shift, and the nominal balance of merchandise trade swings considerably in Canada's favour

[33] Throughout this study, the exchange rate is defined as $U.S./$Canadian so that a rise in the exchange rate is equivalent to an appreciation of the Canadian dollar

TABLE 2.14
The balance of payments and the exchange rate: summary

	Annual average				
	1962-73	1974-80	1981-3	1984-6	1987-90
Exchange rate ($US/$CDN)	0.949	0.935	0.840	0.856	0.868
Terms of trade (1971=1.0)	1.014	1.085	1.076	1.115	1.189
In millions of dollars					
Current account balance	-360	-3728	-7079	-5083	-4315
Balance on trade	1232	3046	7197	17116	30639
Balance on capital service	-890	-3592	-7345	-12806	-23113
Balance on other service[a]	-837	-3739	-8121	-10486	-13150
Net long-term capital flows	1120	3534	4190	6821	6383
Net short-term flows	-514	-433	2411	-1954	-2284
As percentage of nominal GNP					
Current account balance	-0.7	-1.8	-1.9	-0.9	-0.6
Balance on trade	1.5	1.3	1.9	3.2	3.9
Balance on capital service	-1.2	-1.6	-2.0	-2.4	-2.9
Balance on other service[a]	-1.1	-1.7	-2.2	-2.0	-1.7
Net long-term capital flows	1.6	1.8	1.1	1.3	0.8
Net short-term flows	-0.6	-0.2	0.7	-0.4	-0.3

a Includes 'errors and omissions', which are mostly unmeasured capital flows.

through the 1980s. However, since the energy trade is so critical to this result - and thus to the results for the whole balance of payments - it and the exchange-rate projection must be considered more uncertain than other aspects of the projection.[34]

While the merchandise balance is projected to improve in nominal (not real) terms, the service account worsens through the 1980s - especially in capital service (the payment of interest and dividends abroad). This is the result of interest rates that are high (relative to all but the last few years) and of the heavy long- and short-term borrowing projected at least through the middle of the decade. In other words, Canada must generate a larger and larger merchandise surplus in the 1980s to service its borrowing.[35]

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[34] The risks are not all 'down'; successful exploitation of new energy sources in Canada, coupled with a major oil disruption in the later 1980s, could result in a very large merchandise surplus - which would pose its own problems.

[35] Note that this projection is not necessarily an argument against foreign borrowing. Many large corporations also borrow heavily to finance invest-

Figure 2.13
The exchange rate and the terms of trade

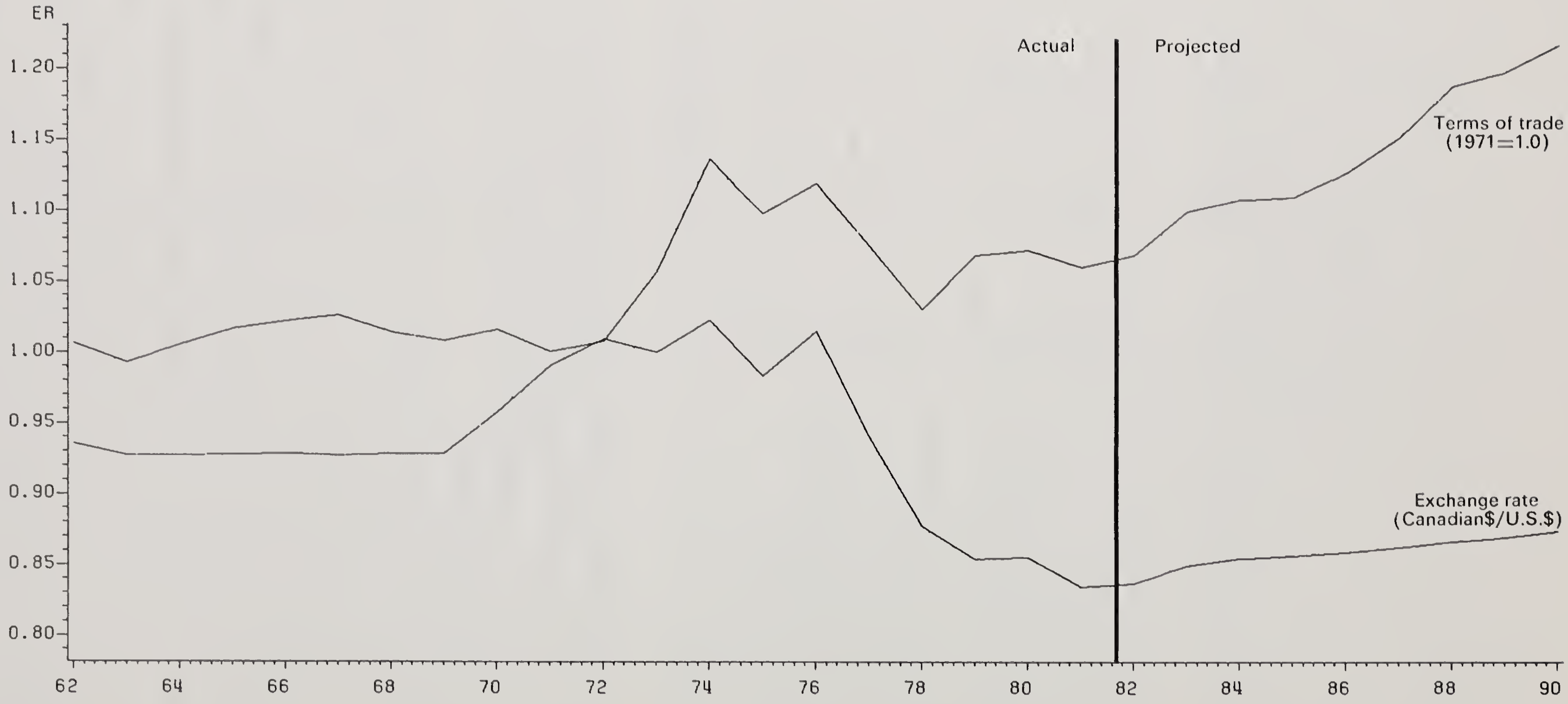
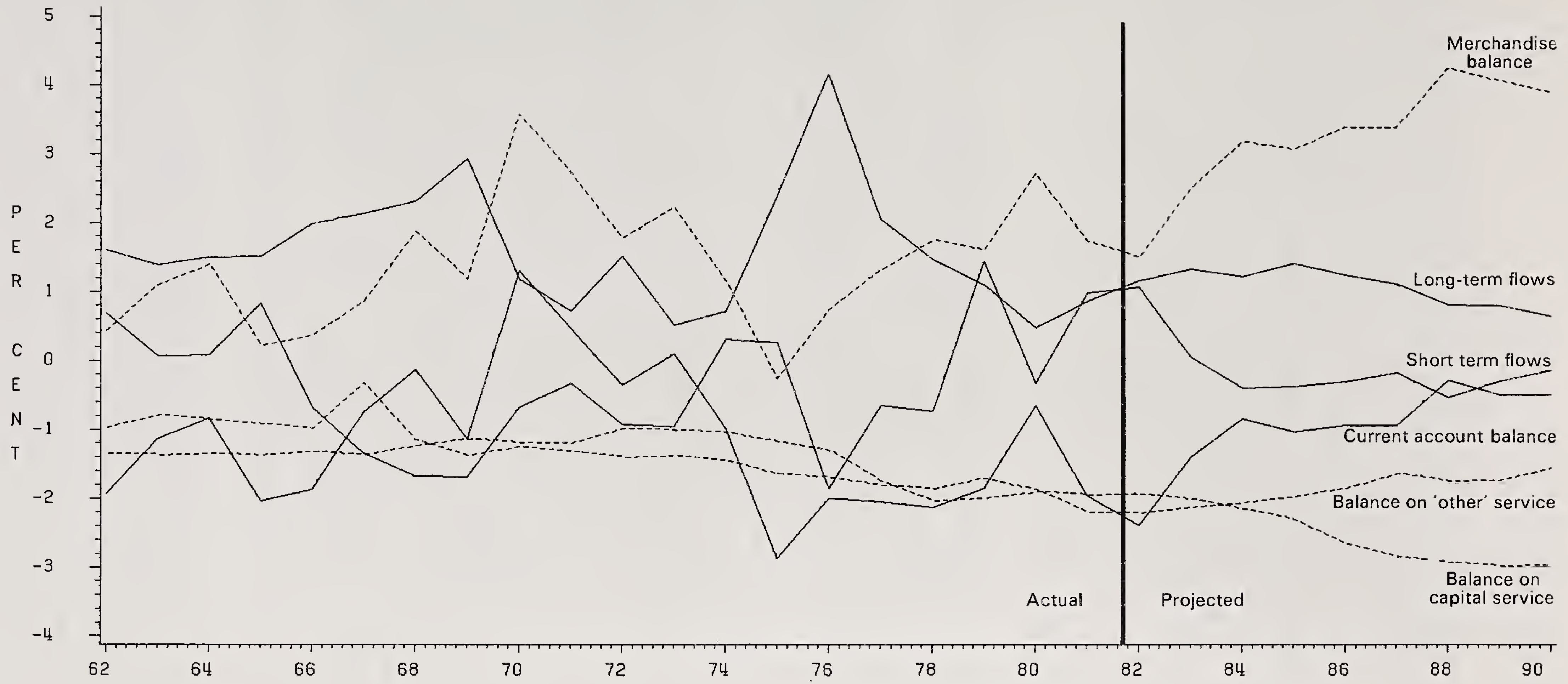


Figure 2.14
Trade and capital-flow balances as percentages of GNP



Foreign borrowing does fall in the later 1980s, although the projected net amount for the 1987-90 period, 0.5 per cent of GNP, may be rather too small - note that net borrowing was about 1 per cent of GNP in 1962-73. The 1981-83 period is unusual in that net short-term borrowing is positive. Historically, Canada has tended to borrow long and lend short. Still, resort to short-term funds is a common phenomenon in the early 1980s, a period of high and volatile interest rates. The stabilization and partial reduction in rates projected for the later 1980s causes a re-emergence of the older pattern.

INDUSTRIAL DETAIL

The national projection's implications for various industries provide a major connection between it and the projection for Ontario. This section discusses the projection for industrial output (value-added) and employment at the national level. The results are summarized in Tables 2.15 through 2.18 and Figures 2.15 and 2.16, while year-by-year details are in Tables 2.33 and 2.34 at the end of the chapter.[36]

Of the major industrial aggregates, the service sectors were responsible for the greatest share of employment creation in both 1962-73 and 1974-80. In the earlier period, the high share reflects the lower rate of productivity growth for services, but in 1974-80, the real output of services grew considerably faster than that of the goods-producing sector.[37]

In the 1980s, the relative strength of the service sector is projected to continue; employment creation here is especially high. By the end of the decade, the service sector provides approximately 60 per cent of total employment (compared to 46 per cent in 1962-73) and supplies about 55 per cent of real output; its smaller share of output is another reflection of the sector's relatively low productivity growth.

The goods-producing sectors and manufacturing are both projected to

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ment that they perceive to be profitable. They must, however, actually generate the profit to service their debt.

[36] Note that the figures for value-added by industry are on the basis used by Statistics Canada before a major revision released in late 1981. Therefore, in looking at output, the reader should focus more on projected growth rates rather than on levels.

[37] The summaries in Tables 2.15 and 2.16 may overstate the effect since 1980 was a year of recession, and a recession tends to hurt goods-producing industries more than services.

TABLE 2.15
Canada's output (real domestic product) by industrial aggregate

	Annual average				
	1962-73	1974-80	1981-3	1984-6	1987-90
Growth rates					
Goods-producing industries	6.0	1.9	1.7	3.2	2.5
Manufacturing	6.6	1.6	0.8	2.7	1.5
Services	6.0	4.5	3.3	4.4	4.5
Government[a]	3.7	-0.0	0.8	1.8	2.1
All industries	5.6	2.9	2.4	3.7	3.5
Percentage of total RDP[b]					
Goods-producing industries	0.406	0.384	0.373	0.369	0.358
Manufacturing	0.230	0.221	0.210	0.204	0.192
Services	0.447	0.493	0.519	0.529	0.545
Government[a]	0.148	0.123	0.107	0.102	0.097

[a] The 'government' sector here is broader than 'public administration and defence'; it includes education and a number of other services, but it does not include hospitals.

[b] Figure may not add to 1.0 because of rounding.

TABLE 2.16
Canada's Employment by industrial aggregate

	Annual average				
	1962-73	1974-80	1981-3	1984-6	1987-90
Growth rates					
Goods-producing industries	1.5	1.7	1.1	1.5	1.0
Manufacturing	2.5	1.4	-0.1	0.6	-0.5
Services	4.2	4.4	3.7	3.2	3.4
Government[a]	4.3	-0.2	-0.8	1.8	1.8
All industries	3.1	2.8	2.3	2.5	2.5
Percentage of total employment					
Goods-producing industries	0.408	0.350	0.334	0.325	0.310
Manufacturing	0.231	0.202	0.189	0.180	0.164
Services	0.462	0.523	0.563	0.574	0.591
Government[a]	0.129	0.127	0.103	0.101	0.099

[a] See note a to Table 2.15.

TABLE 2.17
Canada's output by industry

	Annual average growth rate		
	1961-73	1974-80	1981-90
Agriculture, fishing, & trapping	2.8	2.5	1.9
Forestry	5.5	-0.3	3.1
Mineral-fuel mines & wells	10.7	-1.2	1.5
Other mines & quarries	4.3	0.9	0.3
Food, feed, beverages, & tobacco	4.3	2.0	1.4
Textiles & clothing	6.7	0.8	-0.7
Wood & furniture	5.8	1.4	2.0
Paper, printing, & allied industries	4.9	2.7	1.0
Primary metal & metal fabricating	6.0	1.8	1.3
Motor vehicles & parts	8.7	-1.5	1.3
Machinery & other transportation equipment	15.3	2.7	3.3
Electrical products	8.1	0.5	1.3
Chemical, rubber, & petroleum products	8.3	2.8	3.3
Nonmetallic mineral products	5.9	-0.5	3.0
Other manufacturing industries	4.7	1.8	-0.6
Total manufacturing	6.6	1.6	1.7
Construction	4.5	2.4	4.4
Electric power, water, & gas utilities	8.0	5.2	4.8
Total goods-producing industries	6.0	1.9	2.5
Transportation & storage	6.6	2.4	2.0
Communication	6.9	8.3	7.3
Trade	6.2	2.7	2.8
Finance, insurance, & real estate	5.2	5.0	4.1
Other service industries	6.0	5.6	4.8
Total service industries	6.0	4.5	4.1
Government sector	3.7	-0.0	1.6
Total: all sectors (real gross domestic product at factor cost)	5.6	2.9	3.2

raise their output growth from the low levels of the early 1980s. Nonetheless, since the bulk of all projected productivity growth is concentrated in these sectors, their employment growth is well below that of the economy as a whole - as it was in 1962-80. Indeed, employment growth in manufacturing is projected as slightly negative at the end of the decade.

Note that these tables' definition of 'government' includes education and other noncommercial services. Employment growth in that sector is projected to become positive again if a gradual but sustained economic expansion can be

TABLE 2.18
Canada's employment by industry

	Annual Average growth rate		
	1961-73	1974-80	1981-90
Agriculture, fishing, & trapping	-2.7	0.8	-2.1
Forestry	-0.8	0.9	2.8
Mineral-fuel mines & wells	1.5	8.0	1.4
Food, feed, beverage, & tobacco	1.0	2.0	0.6
Textiles & clothing	1.8	-0.4	-3.0
Wood & furniture	2.9	0.6	-0.2
Paper, printing, & allied industries	1.8	2.7	0.0
Primary metal & metal fabricating	2.9	1.6	0.4
Motor vehicles & parts	6.7	-1.5	1.5
Machinery & other transportation equipment	3.2	3.4	-0.0
Electrical products	3.2	0.2	-0.6
Chemical, rubber, & petroleum products	1.6	3.0	1.2
Nonmetallic mineral products	2.2	0.7	2.3
Other manufacturing industries	2.9	-0.1	-2.2
Total manufacturing	2.5	1.4	-0.0
Construction	3.3	2.2	5.5
Electric power, water, & gas utilities	3.0	3.4	2.6
Total goods-producing industries	1.5	1.7	1.2
Transportation & storage	1.5	1.3	0.0
Communication	3.7	3.2	3.3
Trade	3.7	3.0	2.5
Finance, insurance, & real estate	4.7	5.4	3.3
Other service industries	5.6	6.1	4.6
Total service industries	4.2	4.4	3.4
Government sector	4.3	-0.2	1.0
Total: all sector	3.1	2.8	2.4

achieved. Nonetheless, the share of 'government' employment is projected to decline slightly over the 1980s.

Individual industries

A summary of growth rates by individual industries is given in Tables 2.17 and 2.18. As we have seen, real demand in the 1980s is projected to be led by investment (especially for megaprojects); net exports and even consumption are relatively weak. Thus, it is not surprising that construction and

Figure 2.15
Output growth by industrial aggregate: Canada

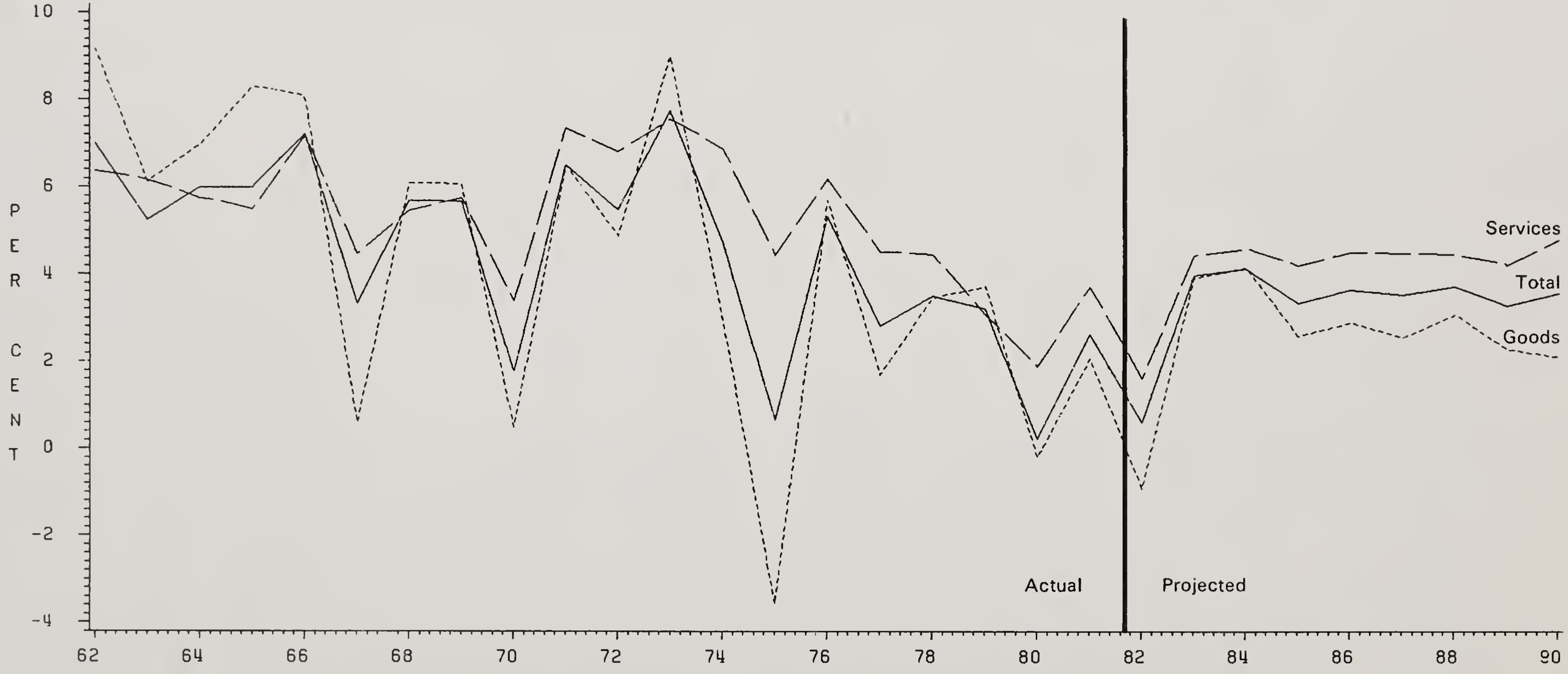
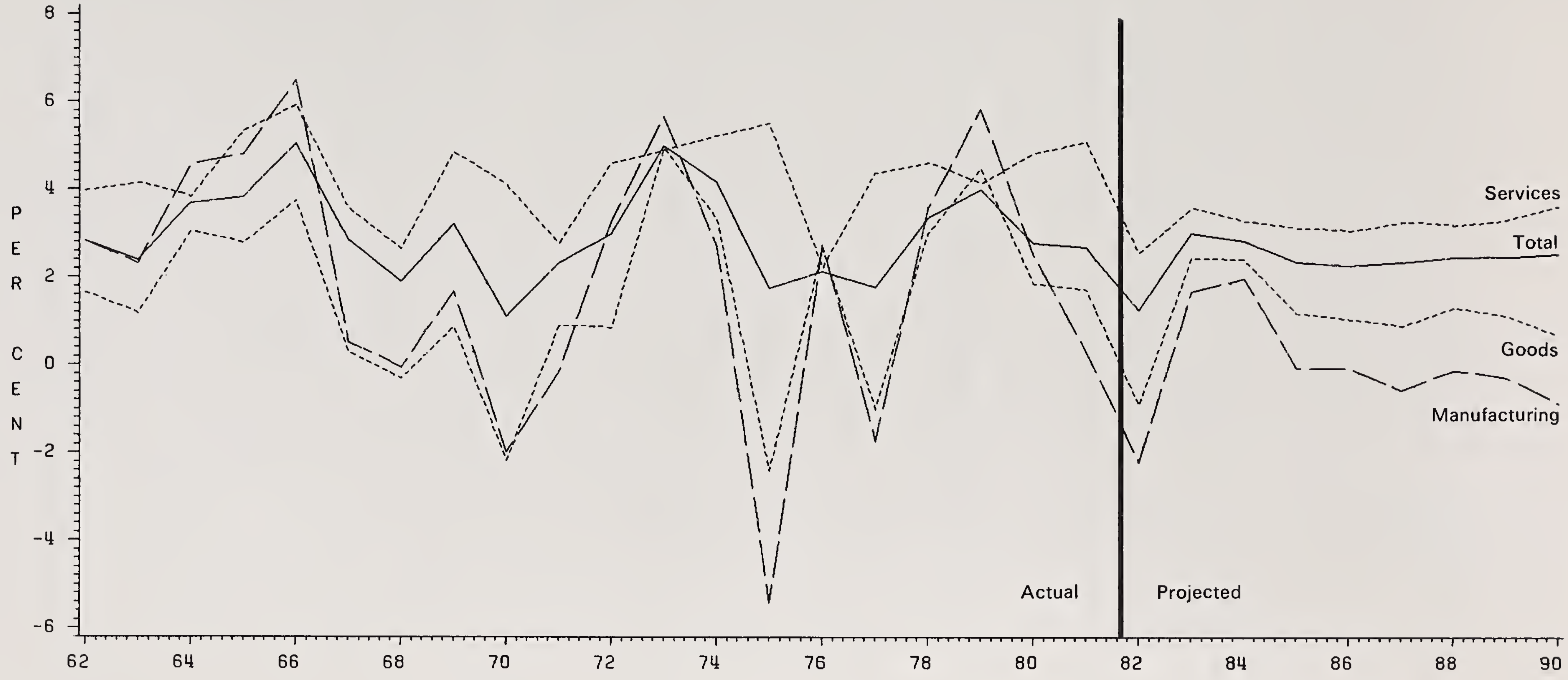


Figure 2.16
Employment growth by industrial aggregate: Canada



utilities show considerable growth, as do nonmetallic minerals, chemicals and machinery. Forestry also expands with a recovery in construction both in Canada and abroad. Given the assumption of a world recovery, the projected growth for mining is probably too low. Growth in the services is quite broad based; the large increase for communication is partly an extension of its past growth trend.

The pattern of projected growth in employment largely follows that of output, allowing for greater productivity growth in the goods-producing sector. In particular, gradually improved employment prospects are assumed to draw workers from the agriculture sector, much as in the 1962-73 period (in fact, the productivity growth of about 4 per cent per year projected for this sector may be excessive). Note that productivity in mining during 1974-80 showed a strong negative trend, reflecting a changing composition of output, greater difficulty of extraction, and increased safety regulations. This trend is assumed to continue but to slow down in the 1980s. A similar negative productivity growth is shown for construction; it is an extrapolation of the trend of the later 1970s and may be a trifle oversevere. On the other hand, the 1974-80 trend of a major reduction in productivity in the mineral fuels sector, caused by the increasing input needed to extract an unchanged real output from petroleum and gas, should perhaps have been projected more severely for the 1980s.

Figures 2.17 and 2.18 plot these industries' productivity in relation to total or manufacturing productivity. The large changes, past and projected, in relative productivities show clearly.

Within the manufacturing sector, it is interesting that motor vehicles have an anomalous result - its qrowth rates for output and employment in the 1980s are about equal, suggesting little productivity increase. Partly, this result stems from using 1980, with its relatively low output levels, as the base year, but it may also indicate that our productivity projections are too pessimistic here. Current heavy investments by the auto industry for re-tooling could bring considerable productivity improvements. Of course, if the productivity improvements are not matched by output gains greater than those projected for the industry, the result would be less job creation.

Within services, productivity growth remains relatively strong in transport and communication; the bulk of job creation is, therefore, in trade, finance, and 'other' services.

Figure 2.17
Labour productivity: mineral fuels, manufacturing, and mining
(ratio to average of all industries)

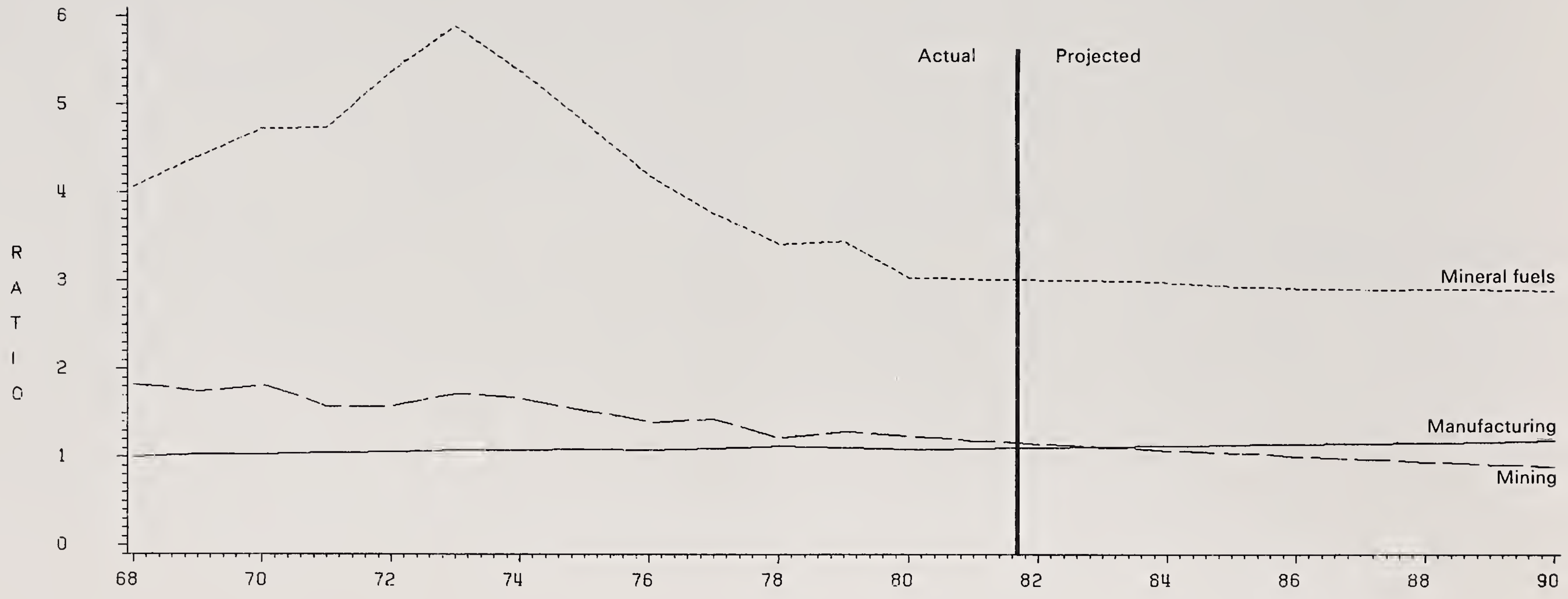
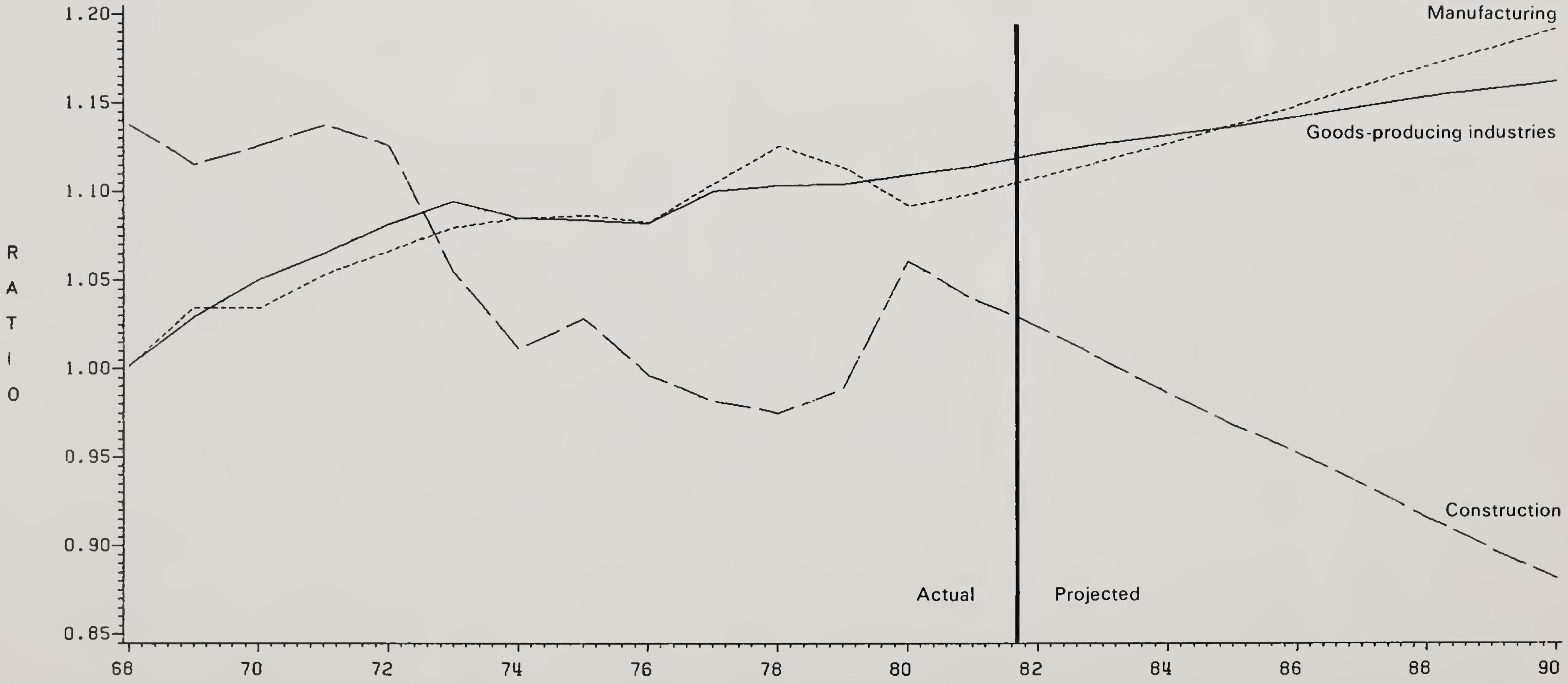


Figure 2.18
Labour productivity: construction, manufacturing, and goods-producing industries (ratio to average of all industries)



CONCLUSION

Since the following chapters, including the projections for the Ontario economy, are heavily dependent on the national base case, several key trends are worth reiterating. Real GNP growth during the decade is projected to average slightly less than 4 per cent per year - a greater rate than that achieved during the latter half of the 1970s but smaller than those recorded in the 1960s and early 1970s. Inflation declines very gradually to approximately 7.5 per cent per year in 1990. Interest rates follow the inflation rate down. The Canadian dollar is projected to appreciate gradually, partly because the country comes closer to self-sufficiency in energy products. The growth of the energy sector is also expected to improve both the balance of trade and the consolidated government balance. Employment growth is projected to return to rates that are more reasonable by historical standards, and the unemployment rate falls to approximately 5.7 per cent by 1990. The service sectors lead output growth throughout most of the decade, with the major portion of employment creation occurring there.

Table 2.19
Energy: production, demand, and price

PRODUCTION/DEMAND

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PETROLEUM PRODUCTION										
CONVENTIONAL CRUDE (OLD)	479	447	415	390	325	297	271	247	226	204
CONVENTIONAL CRUDE (NEW)	5	29	47	59	70	82	95	106	117	126
SYNTHETIC	55	55	80	80	80	80	80	140	140	140
TERTIARY	–	–	–	–	–	–	1	1	4	7
FRONTIER-HIBERNIA	–	–	–	–	–	–	31	63	76	76
TOTAL PETROLEUM PRODUCTION	539	530	542	529	474	459	478	557	563	553
DOMESTIC DEMAND FOR PETROLEUM	656	650	660	660	649	639	634	633	636	638
TOTAL NATURAL-GAS PRODUCTION	2650	2830	3020	3210	3250	3290	3330	3370	3410	3460
DOMESTIC DEMAND FOR NATURAL GAS	1850	1880	1920	1960	2000	2040	2080	2120	2160	2210

DOMESTIC PRICES

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
WELLHEAD PRICE, CONVENTIONAL CRUDE (OLD)	18.96	24.63	31.75	38.05	43.11	48.37	54.13	60.48	67.63	75.48
ENERGY AGREEMENT BASE FOR WELLHEAD PRICE	18.96	24.63	31.75	39.75	47.75	55.75	63.75	71.75	79.75	87.75
REFINERS' ACQUISITION PRICE (BLENDED PRICE)	25.34	32.54	38.13	43.96	50.09	56.77	64.20	72.48	81.82	92.16
NEW OIL REFERENCE PRICE	42.00	47.57	55.06	61.83	68.53	75.78	–	–	–	–
OIL IMPORT PRICE	42.00	43.95	47.23	51.13	57.48	64.49	72.18	80.64	90.17	100.65
PRICE FOR NEW CONVENTIONAL CRUDE	0.0	43.95	47.23	51.13	57.48	64.49	72.17	80.64	90.17	100.64
PRICE FOR TERTIARY PRODUCTION	30.00	43.95	47.23	51.13	57.48	64.49	72.17	80.64	90.17	100.64
PRICE FOR FRONTIER-HIBERNIA PRODUCTION	42.00	43.95	47.23	51.13	57.48	64.49	72.17	80.64	90.17	100.64
PRICE FOR SYNTHETIC-OIL PRODUCTION	42.00	43.95	47.23	51.13	57.48	64.49	72.17	80.64	90.17	100.64
NETBACK ON NATURAL GAS, DOMESTIC SALES	1.84	2.15	2.64	3.15	3.65	4.15	4.65	5.15	5.65	6.15
NETBACK ON NATURAL GAS, EXPORT SALES	4.87	5.38	5.81	6.21	6.98	8.40	10.03	11.91	14.12	16.65
WEIGHTED NETBACK PRICE - NATURAL GAS	2.76	3.24	3.79	4.35	4.93	5.77	6.67	7.66	8.76	9.95
TORONTO CITYGATE PRICE, NATURAL GAS	3.07	3.65	4.14	4.82	5.37	5.92	6.47	7.02	7.57	8.08

PRODUCTION/DEMAND
(YEAR-OVER-YEAR PERCENTAGE CHANGE)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PETROLEUM PRODUCTION										
CONVENTIONAL CRUDE (OLD)	-7.07	-6.67	-7.14	-6.09	-16.67	-8.45	-8.70	-9.02	-8.31	-9.66
CONVENTIONAL CRUDE (NEW)	-	470.00	64.21	26.71	17.71	17.05	16.16	11.49	10.49	7.87
SYNTHETIC	-	-	45.45	-	-	-	-	75.00	.0.0	0.0
TERTIARY	-	-	-	-	-	-	-	100.00	200.00	66.69
FRONTIER-HIBERNIA	-	-	-	-	-	-	-	100.00	20.00	0.0
TOTAL PETROLEUM PRODUCTION	-5.51	-1.57	2.16	-2.35	-10.30	-3.27	4.25	16.43	1.07	-1.76
DOMESTIC DEMAND FOR PETROLEUM	-4.34	-0.89	1.52	0.00	-1.72	-1.50	-0.82	-0.10	0.51	0.25
TOTAL NATURAL-GAS PRODUCTION	1.87	6.79	6.71	6.29	1.25	1.23	1.22	1.20	1.19	1.47
DOMESTIC DEMAND FOR NATURAL GAS	2.21	1.62	2.13	2.08	2.04	2.00	1.96	1.92	1.89	2.31

DOMESTIC PRICES
(YEAR-OVER-YEAR PERCENTAGE CHANGE)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
WELLHEAD PRICE, CONVENTIONAL CRUDE (OLD)	21.66	29.90	28.93	19.84	13.30	12.21	11.91	11.73	11.82	11.62
ENERGY AGREEMENT BASE FOR WELLHEAD PRICE	21.66	29.90	28.93	25.20	20.13	16.75	14.35	12.55	11.15	10.03
REFINERS' ACQUISITION PRICE (BLENDED PRICE)	48.80	28.44	17.16	15.32	13.93	-99.50	13.08	12.91	12.88	12.64
NEW OIL REFERENCE PRICE	40.00	13.26	15.75	12.30	10.84	10.58	-	-	-	-
OIL IMPORT PRICE	14.53	4.65	7.45	8.26	12.42	12.21	11.91	11.73	11.82	11.62
PRICE FOR NEW CONVENTIONAL CRUDE	-	-	7.45	8.26	12.42	12.21	11.90	11.73	11.82	11.62
PRICE FOR TERTIARY PRODUCTION	-	-	7.45	8.26	12.42	12.21	11.90	11.73	11.82	11.62
PRICE FOR FRONTIER-HIBERNIA PRODUCTION	-	4.65	7.45	8.26	12.42	12.21	11.90	11.73	11.82	11.62
PRICE FOR SYNTHETIC-OIL PRODUCTION	-	4.65	7.45	8.26	12.42	12.21	11.90	11.73	11.82	11.62
NETBACK ON NATURAL GAS, DOMESTIC SALES	9.19	16.96	22.51	19.51	15.85	13.68	12.03	10.74	9.70	8.84
NETBACK ON NATURAL GAS, EXPORT SALES	1.20	10.57	7.86	6.97	12.40	20.25	19.43	18.81	18.52	17.94
WEIGHTED NETBACK PRICE - NATURAL GAS	4.81	17.51	17.13	14.55	13.56	16.85	15.70	14.84	14.31	13.58
TORONTO CITYGATE PRICE, NATURAL GAS	25.85	19.15	13.27	16.55	11.40	10.23	9.28	8.49	7.83	6.73

NOTE: Production and demand in millions of barrels or billions of cubic feet; prices in current Canadian dollars per barrel or per thousand cubic feet.

Table 2.20
Energy: trade, revenues, and subsidies

EXTERNAL TRADE

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
EXCHANGE RATE (CDN$/US$)	1.20	1.19	1.18	1.17	1.17	1.16	1.16	1.15	1.15	1.15
CRUDE-OIL IMPORT PRICE (US$/BBL.)	35.03	36.78	40.09	43.70	49.21	55.36	62.22	69.88	78.41	87.90
CRUDE-OIL IMPORT PRICE (CDN$/BBL.)	42.00	43.95	47.23	51.13	57.48	64.49	72.18	80.64	90.17	100.65
OIL IMPORTS (EX SWAPS) (MILL.BBL.)	151	155	154	168	174	180	155	76	74	85
OIL IMPORTS (CDN.$MILL)	8027	8341	8942	10392	12038	13879	13745	8971	9791	12084
NATURAL-GAS EXPORTS (BILL.CU.FT.)	800	950	1100	1250	1250	1250	1250	1250	1250	1250
OIL EXPORTS (EX SWAPS) (MILL.BBL)	34	35	36	37	0	0	0	0	0	0
OIL & GAS EXPORTS (CDN.$MILL)	7589	8614	10228	12126	11402	13490	15874	18605	21776	25389

FEDERAL REVENUES & SUBSIDIES
(MILLIONS OF DOLLARS)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PETROLEUM COMPENSATION CHARGE	3687	4401	4209	3906	4529	5369	6380	7599	9031	10642
CANADIAN OWNERSHIP CHARGE	699	1030	0	0	0	0	0	0	0	0
PETROLEUM EXPORT TAX	422	373	319	289	0	0	0	0	0	0
TAX ON NAT'L GAS & GAS LIQUIDS	904	1128	1440	1470	1500	1530	1560	1590	1620	1658
PETROLEUM & NAT'L GAS REVENUE TAX (INCLUDES 50% TAX ON NEW WELLHEAD - NEP)	2207	3348	4738	5592	5722	6097	6038	6501	6602	6700
SUBSIDIES ON PETROLEUM IMPORTS	3231	2798	2234	2070	2363	2744	2624	1336	1433	1889
TOTAL IMPORT & PROD'N SUBSIDIES	4498	4412	4196	3892	4515	5351	6359	7586	9018	10656
TOTAL PROVINCIAL ROYALTIES	6526	8294	10318	12107	12695	14410	17147	20708	23872	26890
GROSS CORP. REVENUES (PRE-TAX)	14197	17608	22383	26376	28447	32069	37612	48170	54983	61518

EXTERNAL TRADE
(YEAR-OVER-YEAR PERCENTAGE CHANGE)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
EXCHANGE RATE (CDN$/US$)	-0.41	-0.33	-1.42	-0.68	-0.17	-0.85	-0.43	-0.52	-0.35	-0.43
CRUDE-OIL IMPORT PRICE (US$/BBL.)	15.00	5.00	9.00	9.00	12.61	12.50	12.39	12.31	12.21	12.10
CRUDE-OIL IMPORT PRICE (CDN$/BBL.)	14.53	4.65	7.45	8.26	12.42	12.21	11.91	11.73	11.82	11.62
OIL IMPORTS (EX SWAPS) (MILL.BBL.)	-5.55	2.42	-0.28	9.01	3.67	3.30	-13.73	-50.95	-3.50	15.61
OIL IMPORTS (CDN.$MILL)	9.44	3.91	7.20	16.22	15.83	21.72	-0.96	-34.73	9.13	23.43
NATURAL-GAS EXPORTS (BILL.CU.FT.)	1.10	18.75	15.79	13.64	0.0	0.0	0.0	0.0	0.0	0.0
OIL EXPORTS (EX SWAPS) (MILL.BBL)	-4.09	3.24	3.29	3.18	-100.00	0.0	0.0	0.0	0.0	0.0
OIL & GAS EXPORTS (CDN.$MILL)	9.41	13.50	18.74	18.56	-5.97	18.31	17.67	17.21	17.04	16.60

FEDERAL REVENUES & SUBSIDIES
(YEAR-OVER-YEAR PERCENTAGE CHANGE)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PETROLEUM COMPENSATION CHARGE	-	19.36	-4.36	-7.21	15.96	18.54	18.82	19.11	18.85	17.84
CANADIAN OWNERSHIP CHARGE	0.0	47.26	-100.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PETROLEUM EXPORT TAX	-43.87	-11.62	-14.41	-9.55	-100.00	0.0	0.0	0.0	0.0	0.0
TAX ON NAT'L GAS & GAS LIQUIDS	-	24.81	27.66	2.08	2.04	2.00	1.96	1.92	1.89	2.31
PETROLEUM & NAT'L GAS REVENUE TAX (INCLUDES 50% TAX ON NEW WELLHEAD - NEP)	-	51.70	41.54	18.02	2.31	6.56	-0.96	7.66	1.56	1.48
SUBSIDIES ON PETROLEUM IMPORTS	9.63	-13.38	-20.17	-7.33	14.14	16.14	-4.36	-49.11	7.31	31.78
TOTAL IMPORT & PROD'N SUBSIDIES	20.27	-1.91	-4.89	-7.25	16.01	18.51	18.84	19.29	18.88	18.16
TOTAL PROVINCIAL ROYALTIES	4.26	27.08	24.41	17.34	4.86	13.51	18.99	20.77	15.28	12.64
GROSS CORP. REVENUES (PRE-TAX)	21.17	24.03	27.12	17.84	7.85	12.73	17.28	28.07	14.14	11.89

NOTE: Revenues and subsidies in millions of current dollars.

Table 2.21
Energy: balance of payments and refiners' acquisition price

EXTERNAL TRADE								
	1977	1978	1979	1980	1981	1982	1983	1984
EXCHANGE RATE (CDN$/US$)	1.06	1.14	1.17	1.17	1.20	1.19	1.18	1.17
	(7.89)	(7.24)	(2.70)	(-0.17)	(2.54)	(-0.33)	(-1.42)	(-0.68)
($71 MILLION)								
EXPORTS OF OIL & GAS	630	531	583	450	435	438	487	552
	(-21.06)	(-15.66)	(9.72)	(-22.78)	(-3.30)	(0.71)	(11.22)	(13.31)
IMPORTS OF OIL	497	479	461	423	431	445	467	511
	(-14.57)	(-3.50)	(-3.77)	(-8.36)	(1.90)	(3.22)	(5.00)	(9.39)
($ MILLIONS)								
EXPORTS OF OIL & GAS	3788	3768	5330	6868	7589	8615	10225	12128
	(-2.93)	(-0.54)	(41.46)	(28.86)	(10.50)	(13.53)	(18.68)	(18.61)
IMPORTS OF OIL	3218	3493	4536	6978	8026	8343	8939	10394
	(-1.21)	(8.55)	(29.87)	(53.84)	(15.02)	(3.95)	(7.14)	(16.28)
(1971=100.(CDN))								
DEFLATOR: OIL & GAS EXPORTS ($US)	566	623	785	1322	1471	1645	1782	1877
	(13.72)	(10.01)	(26.09)	(68.43)	(11.20)	(11.88)	(8.30)	(5.35)
DEFLATOR: OIL & GAS EXPORTS ($CDN)	603	710	920	1546	1763	1967	2099	2197
	(22.75)	(17.92)	(29.44)	(68.17)	(13.99)	(11.56)	(6.71)	(4.67)
DEFLATOR: OIL IMPORTS ($US)	608	637	835	1416	1551	1570	1626	1739
	(6.85)	(4.81)	(31.05)	(69.52)	(9.53)	(1.22)	(3.56)	(6.97)
DEFLATOR: OIL IMPORTS ($CDN)	647	727	978	1656	1859	1876	1914	2035
	(15.30)	(12.39)	(34.53)	(69.29)	(12.26)	(0.94)	(2.04)	(6.28)
DOMESTIC PRICES								
	1977	1978	1979	1980	1981	1982	1983	1984
REFINERS' ACQUISITION PRICE ($/BBL)	10.45	12.25	13.25	16.53	25.34	32.54	38.13	43.96
	(17.74)	(17.20)	(8.16)	(24.74)	(53.31)	(28.44)	(17.16)	(15.32)
CPI - GASOLINE (1971=1.0)	1.73	1.83	2.02	2.40	3.10	3.65	4.16	4.78
	(8.63)	(5.56)	(10.20)	(19.01)	(29.17)	(17.79)	(13.88)	(14.93)

EXTERNAL TRADE

	1985	1986	1987	1988	1989	1990
EXCHANGE RATE (CDN$/US$)	1.17	1.16	1.16	1.15	1.15	1.15
	(-0.17)	(-0.26)	(-0.43)	(-0.52)	(-0.35)	(-0.43)
($71 MILLION)						
EXPORTS OF OIL & GAS	448	446	453	460	467	476
	(-18.90)	(-0.31)	(1.43)	(1.55)	(1.63)	(1.79)
IMPORTS OF OIL	526	541	479	280	273	302
	(3.04)	(2.75)	(-11.50)	(-41.59)	(-2.41)	(10.58)
($ MILLIONS)						
EXPORTS OF OIL & GAS	11401	13493	15876	18603	21772	25387
	(-5.99)	(18.35)	(17.67)	(17.18)	(17.03)	(16.60)
IMPORTS OF OIL	12036	13881	13748	8970	9789	12083
	(15.80)	(15.33)	(-0.96)	(-34.75)	(9.12)	(23.44)
(1971=100.(CDN))						
DEFLATOR; OIL & GAS EXPORTS ($US)	2180	2594	3022	3506	4052	4662
	(16.13)	(18.99)	(16.51)	(16.01)	(15.57)	(15.04)
DEFLATOR; OIL & GAS EXPORTS ($CDN)	2546	3023	3507	4046	4660	5338
	(15.91)	(18.72)	(16.01)	(15.39)	(15.16)	(14.55)
DEFLATOR; OIL IMPORTS ($US)	1958	2203	2476	2781	3120	3498
	(12.60)	(12.50)	(12.40)	(12.31)	(12.21)	(12.10)
DEFLATOR; OIL IMPORTS ($CDN)	2287	2567	2872	3209	3587	4005
	(12.38)	(12.24)	(11.91)	(11.70)	(11.81)	(11.63)

DOMESTIC PRICES

	1985	1986	1987	1988	1989	1990
REFINERS' ACQUISITION PRICE ($/BBL)	50.09	56.77	64.20	72.48	81.82	92.16
	(13.93)	(13.34)	(13.08)	(12.91)	(12.88)	(12.64)
CPI - GASOLINE (1971=1.0)	5.40	6.05	6.84	7.73	8.71	9.79
	(13.02)	(11.96)	(13.14)	(12.90)	(12.75)	(12.32)

NOTE: percentage changes in parentheses.

Table 2.22
The national economy: summary by year

	1977	1978	1979	1980	1981	1982	1983	1984
GROSS NATIONAL PRODUCT	208868	230353	261961	289859	327120	368023	420644	475395
IMPLICIT PRICE DEFLATOR FOR GNP (1971=1.0)	1.71	1.82	2.01	2.23	2.45	2.74	3.01	3.28
REAL GROSS NATIONAL PRODUCT	121762	126281	130115	130160	133529	134304	139576	145094
EXPENDITURE ON PERSONAL CONSUMPTION	77416	79550	81136	81955	83264	84240	86904	89640
EXPENDITURE BY GOVERNMENTS	26273	26564	26474	26342	26839	27462	28044	28522
INVESTMENT EXPENDITURE	23314	23481	25168	26277	27555	27778	29660	31451
RESIDENTIAL CONSTRUCTION	6152	5947	5513	4926	4977	4804	5101	5347
NON-RESIDENTIAL AND MACH. & EQUIP.	17162	17534	19655	21351	22578	22974	24560	26103
EXPORTS	28046	30929	31766	32087	32369	32771	34009	35082
IMPORTS	32844	34345	36420	35615	37058	38024	39334	40182
CAPACITY UTILIZATION RATE	0.81	0.83	0.84	0.80	0.79	0.77	0.77	0.78
UNEMPLOYMENT RATE	8.12	8.38	7.47	7.53	7.57	8.41	8.04	7.12
EMPLOYMENT (THOUSANDS)	9649	9971	10368	10656	10940	11077	11410	11733
NARROWLY DEFINED MONEY SUPPLY, M1	19883	21717	23158	24661	25466	26994	28614	30331
FINANCE CO. 90-DAY PAPER RATE	7.31	9.09	12.16	13.85	18.16	17.84	15.11	13.21
INDUSTRIAL BOND RATE	9.69	10.04	10.99	13.35	16.15	16.47	14.17	12.91
CONSUMER PRICE INDEX (1971=1.00)	1.61	1.75	1.91	2.11	2.37	2.66	2.92	3.17
AVERAGE ANNUAL WAGES AND SALARIES ($ '000)	11.008	11.522	12.449	13.518	15.094	16.703	18.270	19.835
GDP AT FACTOR COST PER EMPLOYEE ($71 '000)	11.142	11.158	11.074	10.798	10.792	10.723	10.823	10.961
EXCHANGE RATE (US $/CDN $)	0.940	0.877	0.854	0.855	0.834	0.837	0.849	0.855
TERMS OF TRADE (PX/PM) (1971=1.0)	1.07	1.03	1.07	1.07	1.06	1.07	1.10	1.11
BALANCE ON CURRENT ACCOUNT	-4301	-4935	-4894	-1904	-6445	-8844	-5946	-4034
CHANGE IN FOREIGN RESERVES	-1421	-3299	1908	-1281	-500	-500	0	0
CONSOLIDATED GOVERNMENT BALANCE	-5005	-6954	-4691	-5983	-1798	-3984	-2132	-2333
PERSONAL SAVINGS RATE (%)	9.66	10.80	10.32	10.11	9.15	8.44	9.05	9.23
NOMINAL AFTER-TAX CORPORATE PROFITS	13672	17373	24857	25564	24942	26836	31465	36543
REAL PERSONAL DISPOSABLE INCOME	87236	90928	92810	93865	94816	94693	98152	101349

	1985	1986	1987	1988	1989	1990
GROSS NATIONAL PRODUCT	531482	594974	662924	739846	822671	915982
IMPLICIT PRICE DEFLATOR FOR GNP (1971=1.0)	3.55	3.85	4.15	4.46	4.80	5.16
REAL GROSS NATIONAL PRODUCT	149674	154572	159810	165743	171191	177413
EXPENDITURE ON PERSONAL CONSUMPTION	92202	95252	98518	101829	105208	108987
EXPENDITURE BY GOVERNMENTS	28997	29697	30396	31303	32069	33161
INVESTMENT EXPENDITURE	33395	35199	37533	39925	42055	44325
RESIDENTIAL CONSTRUCTION	5573	5488	5515	5654	5757	5816
NON-RESIDENTIAL AND MACH. & EQUIP.	27822	29710	32018	34271	36298	38509
EXPORTS	36317	37760	38815	39781	40552	41371
IMPORTS	41869	44012	46176	47875	49525	51301
CAPACITY UTILIZATION RATE	0.79	0.80	0.82	0.83	0.84	0.85
UNEMPLOYMENT RATE	6.87	6.76	6.26	6.09	5.88	5.70
EMPLOYMENT (THOUSANDS)	12008	12282	12570	12879	13199	13535
NARROWLY DEFINED MONEY SUPPLY, M1	31847	33439	35111	36867	38710	40646
FINANCE CO. 90-DAY PAPER RATE	12.82	12.24	11.70	11.35	11.37	10.83
INDUSTRIAL BOND RATE	12.80	12.60	12.43	12.15	11.94	11.54
CONSUMER PRICE INDEX (1971=1.00)	3.46	3.76	4.07	4.37	4.72	5.09
AVERAGE ANNUAL WAGES AND SALARIES ($ '000)	21.501	23.369	25.347	27.280	29.264	31.314
GDP AT FACTOR COST PER EMPLOYEE ($71 '000)	11.068	11.215	11.346	11.485	11.576	11.692
EXCHANGE RATE (US $/CDN $)	0.856	0.858	0.862	0.867	0.870	0.873
TERMS OF TRADE (PX/PM) (1971=1.0)	1.11	1.13	1.15	1.19	1.20	1.22
BALANCE ON CURRENT ACCOUNT	-5546	-5665	-6276	-2133	-4197	-4652
CHANGE IN FOREIGN RESERVES	0	0	0	0	0	0
CONSOLIDATED GOVERNMENT BALANCE	236	3099	5178	5416	6497	7128
PERSONAL SAVINGS RATE (%)	8.62	8.31	8.47	9.31	9.05	9.39
NOMINAL AFTER-TAX CORPORATE PROFITS	45627	53771	61634	71007	80433	90731
REAL PERSONAL DISPOSABLE INCOME	103469	106435	110172	114805	118141	122741

NOTE: Nominal values in millions of current dollars;
real values in millions of 1971 dollars.

Table 2.22 continued

PERCENTAGE CHANGE

	1977	1978	1979	1980	1981	1982	1983	1984
GROSS NATIONAL PRODUCT	9.34	10.29	13.72	10.65	12.85	12.50	14.30	13.02
IMPLICIT PRICE DEFLATOR FOR GNP	7.05	6.34	10.36	10.63	10.00	11.82	10.00	8.71
REAL GROSS NATIONAL PRODUCT	2.11	3.71	3.04	0.03	2.59	0.58	3.93	3.95
EXPENDITURE ON PERSONAL CONSUMPTION	2.88	2.76	1.99	1.01	1.60	1.17	3.16	3.15
EXPENDITURE BY GOVERNMENTS	2.75	1.11	-0.34	-0.50	1.89	2.32	2.12	1.70
INVESTMENT EXPENDITURE	-0.95	0.72	7.18	4.41	4.86	0.81	6.78	6.04
RESIDENTIAL CONSTRUCTION	-6.28	-3.33	-7.30	-10.65	1.04	-3.48	6.19	4.83
NON-RESIDENTIAL AND MACH. & EQUIP.	1.11	2.17	12.10	8.63	5.75	1.75	6.90	6.28
EXPORTS	6.94	10.28	2.71	1.01	0.88	1.24	3.78	3.15
IMPORTS	2.11	4.57	6.04	-2.21	4.05	2.61	3.44	2.16
CAPACITY UTILIZATION RATE *	-0.02	0.02	0.01	-0.05	-0.01	-0.01	-0.00	0.01
UNEMPLOYMENT RATE *	0.99	0.26	-0.91	0.06	0.04	0.84	-0.37	-0.92
EMPLOYMENT	1.75	3.34	3.99	2.77	2.67	1.25	3.01	2.83
NARROWLY DEFINED MONEY SUPPLY, M1	9.28	9.22	6.64	6.49	3.26	6.00	6.00	6.00
FINANCE CO. 90-DAY PAPER RATE *	-1.89	1.78	3.08	1.69	4.31	-0.32	-2.74	-1.90
INDUSTRIAL BOND RATE *	-0.74	0.35	0.95	2.36	2.80	0.32	-2.30	-1.26
CONSUMER PRICE INDEX	8.01	8.92	9.13	10.19	12.49	12.41	9.50	8.76
AVERAGE ANNUAL WAGES AND SALARIES	7.49	4.67	8.04	8.59	11.66	10.66	9.38	8.56
PRODUCTIVITY CHANGE (GDP/EMPLOYEE)	1.04	0.15	-0.75	-2.49	-0.06	-0.64	0.94	1.27
EXCHANGE RATE (US $/CDN $)	-7.31	-6.75	-2.63	0.17	-2.48	0.33	1.44	0.68
TERMS OF TRADE (PX/PM)	-3.98	-4.14	3.69	0.33	-1.09	0.77	2.91	0.78
BALANCE ON CURRENT ACCOUNT ($ MILL) *	-459	-634	41	2990	-4541	-2399	2897	1912
CHANGE IN FOREIGN RESERVES ($ MILL) *	-1943	-1878	5207	-3189	781	0	500	0
CONSOLIDATED GOVERNMENT BALANCE ($ MILL) *	-1783	-1949	2263	-1292	4184	-2185	1852	-200
PERSONAL SAVINGS RATE (%) *	-0.36	1.14	-0.48	-0.21	-0.96	-0.71	0.61	0.18
NOMINAL AFTER-TAX CORPORATE PROFITS	6.22	27.07	43.08	2.84	-2.43	7.59	17.25	16.14
REAL PERSONAL DISPOSABLE INCOME	2.41	4.23	2.07	1.14	1.01	-0.13	3.65	3.26

PERCENTAGE CHANGE

	1985	1986	1987	1988	1989	1990
GROSS NATIONAL PRODUCT	11.80	11.95	11.42	11.60	11.19	11.34
IMPLICIT PRICE DEFLATOR FOR GNP	8.38	8.40	7.77	7.62	7.65	7.44
REAL GROSS NATIONAL PRODUCT	3.16	3.27	3.39	3.71	3.29	3.63
EXPENDITURE ON PERSONAL CONSUMPTION	2.86	3.31	3.43	3.36	3.32	3.59
EXPENDITURE BY GOVERNMENTS	1.66	2.41	2.35	2.98	2.45	3.41
INVESTMENT EXPENDITURE	6.18	5.40	6.63	6.37	5.34	5.40
RESIDENTIAL CONSTRUCTION	4.22	-1.52	0.49	2.51	1.83	1.02
NON-RESIDENTIAL AND MACH. & EQUIP.	6.59	6.79	7.77	7.04	5.91	6.09
EXPORTS	3.52	3.98	2.79	2.49	1.94	2.02
IMPORTS	4.20	5.12	4.92	3.68	3.45	3.59
CAPACITY UTILIZATION RATE *	0.01	0.01	0.01	0.01	0.01	0.01
UNEMPLOYMENT RATE *	-0.25	-0.11	-0.50	-0.17	-0.21	-0.18
EMPLOYMENT	2.34	2.28	2.35	2.46	2.48	2.54
NARROWLY DEFINED MONEY SUPPLY, M1	5.00	5.00	5.00	5.00	5.00	5.00
FINANCE CO. 90-DAY PAPER RATE *	-0.39	-0.58	-0.53	-0.36	0.03	-0.54
INDUSTRIAL BOND RATE *	-0.11	-0.20	-0.17	-0.28	-0.21	-0.41
CONSUMER PRICE INDEX	9.06	8.64	8.36	7.30	7.89	7.89
AVERAGE ANNUAL WAGES AND SALARIES	8.40	8.69	8.47	7.62	7.27	7.00
PRODUCTIVITY CHANGE (GDP/EMPLOYEE)	0.98	1.33	1.16	1.23	0.79	1.00
EXCHANGE RATE (US $/CDN $)	0.17	0.26	0.43	0.52	0.35	0.44
TERMS OF TRADE (PX/PM)	0.17	1.56	2.17	3.17	0.85	1.60
BALANCE ON CURRENT ACCOUNT ($ MILL) *	-1511	-119	-610	4142	-2063	-454
CHANGE IN FOREIGN RESERVES ($ MILL) *	0	0	0	0	0	0
CONSOLIDATED GOVERNMENT BALANCE ($ MILL) *	2570	2862	2079	238	1081	632
PERSONAL SAVINGS RATE (%) *	-0.60	-0.31	0.16	0.84	-0.26	0.35
NOMINAL AFTER-TAX CORPORATE PROFITS	24.86	17.85	14.62	15.21	13.27	12.80
REAL PERSONAL DISPOSABLE INCOME	2.09	2.87	3.51	4.21	2.91	3.89

NOTE: * indicates change in levels.

Table 2.23
Major components of GNP

	1977	1978	1979	1980	1981	1982	1983	1984
PERSONAL CONSUMPTION EXPENDITURES. TOTAL	77416	79550	81136	81955	83264	84240	86904	89640
	(2.88)	(2.76)	(1.99)	(1.01)	(1.60)	(1.17)	(3.16)	(3.15)
DURABLE GOODS	13385	13892	14502	14271	14468	14219	15227	15894
	(2.76)	(3.79)	(4.39)	(-1.59)	(1.38)	(-1.72)	(7.09)	(4.38)
GOVERNMENT								
CURRENT	22392	22757	22880	22762	23108	23560	24035	24358
	(3.24)	(1.63)	(0.54)	(-0.52)	(1.52)	(1.95)	(2.02)	(1.34)
GROSS CAPITAL FORMATION	3881	3807	3594	3580	3731	3902	4010	4165
	(-0.03)	(-1.91)	(-5.59)	(-0.39)	(4.21)	(4.60)	(2.75)	(3.87)
BUSINESS GROSS FIXED CAPITAL FORMATION,TOTAL	23314	23481	25168	26277	27555	27778	29660	31451
	(-0.95)	(0.72)	(7.18)	(4.41)	(4.86)	(0.81)	(6.78)	(6.04)
RESIDENTIAL CONSTRUCTION	6152	5947	5513	4926	4977	4804	5101	5347
	(-6.28)	(-3.33)	(-7.30)	(-10.65)	(1.04)	(-3.48)	(6.19)	(4.83)
NON-RESIDENTIAL CONSTRUCTION	7647	7791	8824	9917	10626	10787	11589	12342
	(3.03)	(1.88)	(13.26)	(12.39)	(7.15)	(1.51)	(7.44)	(6.49)
MACHINERY AND EQUIPMENT	9515	9743	10831	11434	11951	12187	12971	13762
	(-0.38)	(2.40)	(11.17)	(5.57)	(4.53)	(1.97)	(6.43)	(6.10)
VALUE OF PHYSICAL CHANGE IN BUS. INVENTORIES	60	232	1872	-762	850	445	660	949
	(-906)	(172)	(1640)	(-2634)	(1612)	(-404)	(215)	(289)
EXPORTS. TOTAL	28046	30929	31766	32087	32369	32771	34009	35082
	(6.94)	(10.28)	(2.71)	(1.01)	(0.88)	(1.24)	(3.78)	(3.15)
MERCHANDISE	23372	25731	26108	26015	26395	26667	27607	28357
	(8.67)	(10.09)	(1.47)	(-0.36)	(1.46)	(1.03)	(3.52)	(2.72)
SERVICES	4674	5198	5658	6072	5975	6104	6402	6724
	(-0.93)	(11.23)	(8.85)	(7.31)	(-1.60)	(2.17)	(4.88)	(5.04)
IMPORTS, TOTAL	32844	34345	36420	35615	37058	38024	39334	40182
	(2.11)	(4.57)	(6.04)	(-2.21)	(4.05)	(2.61)	(3.44)	(2.16)
MERCHANDISE	22784	23882	25681	24242	25440	26259	26957	27109
	(2.78)	(4.82)	(7.53)	(-5.61)	(4.94)	(3.22)	(2.66)	(0.56)
SERVICES	10060	10463	10739	11374	11618	11765	12376	13073
	(0.62)	(4.00)	(2.64)	(5.91)	(2.15)	(1.26)	(5.20)	(5.63)
STATISTICAL DISCREPANCY	-503	-130	119	-124	-289	-368	-367	-368
	(-368)	(373)	(249)	(-243)	(-165)	(-78)	(1)	(-1)
GROSS NATIONAL PRODUCT	121762	126281	130115	130160	133529	134304	139576	145094
	(2.11)	(3.71)	(3.04)	(0.03)	(2.59)	(0.58)	(3.93)	(3.95)

	1985	1986	1987	1988	1989	1990
PERSONAL CONSUMPTION EXPENDITURES. TOTAL	92202	95252	98518	101829	105208	108987
	(2.86)	(3.31)	(3.43)	(3.36)	(3.32)	(3.59)
DURABLE GOODS	16289	17126	18123	18950	19617	20439
	(2.49)	(5.13)	(5.82)	(4.57)	(3.52)	(4.19)
GOVERNMENT						
CURRENT	24677	25208	25725	26441	27007	27888
	(1.31)	(2.15)	(2.05)	(2.78)	(2.14)	(3.26)
GROSS CAPITAL FORMATION	4320	4489	4671	4862	5062	5273
	(3.74)	(3.91)	(4.04)	(4.09)	(4.11)	(4.16)
BUSINESS GROSS FIXED CAPITAL FORMATION,TOTAL	33395	35199	37533	39925	42055	44325
	(6.18)	(5.40)	(6.63)	(6.37)	(5.34)	(5.40)
RESIDENTIAL CONSTRUCTION	5573	5488	5515	5654	5757	5816
	(4.22)	(-1.52)	(0.49)	(2.51)	(1.83)	(1.02)
NON-RESIDENTIAL CONSTRUCTION	13218	14144	15195	16183	17063	18054
	(7.10)	(7.01)	(7.43)	(6.51)	(5.44)	(5.81)
MACHINERY AND EQUIPMENT	14605	15567	16823	18088	19234	20455
	(6.13)	(6.59)	(8.07)	(7.52)	(6.34)	(6.35)
VALUE OF PHYSICAL CHANGE IN BUS. INVENTORIES	1000	1044	1091	1151	1200	1239
	(51)	(44)	(46)	(60)	(50)	(39)
EXPORTS. TOTAL	36317	37760	38815	39781	40552	41371
	(3.52)	(3.98)	(2.79)	(2.49)	(1.94)	(2.02)
MERCHANDISE	29402	30623	31329	31902	32326	32670
	(3.69)	(4.15)	(2.30)	(1.83)	(1.33)	(1.06)
SERVICES	6914	7137	7487	7879	8226	8701
	(2.82)	(3.23)	(4.90)	(5.24)	(4.41)	(5.77)
IMPORTS, TOTAL	41869	44012	46176	47875	49525	51301
	(4.20)	(5.12)	(4.92)	(3.68)	(3.45)	(3.59)
MERCHANDISE	28393	29909	31623	32703	33900	35506
	(4.74)	(5.34)	(5.73)	(3.41)	(3.66)	(4.74)
SERVICES	13476	14103	14553	15172	15624	15796
	(3.08)	(4.65)	(3.19)	(4.25)	(2.98)	(1.10)
STATISTICAL DISCREPANCY	-367	-367	-367	-369	-368	-367
	(0)	(0)	(0)	(-2)	(1)	(1)
GROSS NATIONAL PRODUCT	149674	154572	159810	165743	171191	177413
	(3.16)	(3.27)	(3.39)	(3.71)	(3.29)	(3.63)

NOTE: Levels in millions of 1971 dollars;
percentage or level changes in parentheses.

Table 2.24
Implicit price index of major components of GNP (1971=1.0)

	1977	1978	1979	1980	1981	1982	1983	1984
PERSONAL CONSUMPTION EXPENDITURES. TOTAL	1.58	1.70	1.86	2.05	2.28	2.55	2.78	3.01
	(7.45)	(7.42)	(9.18)	(10.51)	(11.27)	(11.70)	(9.01)	(8.25)
DURABLE GOODS	1.37	1.44	1.56	1.69	1.87	2.10	2.32	2.54
	(4.86)	(5.04)	(8.25)	(8.62)	(10.70)	(12.33)	(10.41)	(9.16)
GOVERNMENT								
CURRENT	1.94	2.09	2.27	2.54	2.84	3.17	3.48	3.77
	(9.56)	(8.16)	(8.46)	(11.97)	(11.62)	(11.78)	(9.64)	(8.41)
GROSS FIXED CAPITAL FORMATION	1.76	1.89	2.08	2.26	2.36	2.66	2.83	3.01
	(7.40)	(7.46)	(9.74)	(8.81)	(4.72)	(12.35)	(6.63)	(6.20)
BUSINESS GROSS FIXED CAPITAL FORMATION,TOTAL	1.78	1.92	2.11	2.30	2.52	2.78	3.02	3.25
	(8.35)	(8.27)	(9.93)	(8.94)	(9.28)	(10.62)	(8.62)	(7.55)
RESIDENTIAL CONSTRUCTION	2.08	2.28	2.56	2.81	3.09	3.40	3.67	3.97
	(10.91)	(9.51)	(12.08)	(10.04)	(9.92)	(10.10)	(7.75)	(8.26)
NON-RESIDENTIAL CONSTRUCTION	1.76	1.87	2.05	2.21	2.42	2.67	2.90	3.14
	(7.87)	(6.35)	(9.53)	(7.81)	(9.32)	(10.46)	(8.75)	(8.27)
MACHINERY AND EQUIPMENT	1.59	1.74	1.94	2.16	2.36	2.63	2.87	3.07
	(7.39)	(9.64)	(11.03)	(11.67)	(8.94)	(11.85)	(9.01)	(6.79)
EXPORTS, TOTAL	1.87	2.03	2.43	2.81	3.09	3.47	3.90	4.32
	(7.75)	(8.61)	(19.23)	(15.91)	(9.91)	(12.16)	(12.42)	(10.73)
MERCHANDISE	1.89	2.06	2.50	2.93	3.20	3.59	4.05	4.49
	(7.18)	(8.90)	(21.26)	(17.11)	(9.19)	(12.18)	(12.92)	(10.85)
SERVICES	1.77	1.91	2.09	2.32	2.63	2.95	3.24	3.58
	(10.04)	(7.56)	(9.28)	(11.24)	(13.23)	(12.24)	(9.85)	(10.63)
IMPORTS, TOTAL	1.74	1.98	2.27	2.62	2.92	3.25	3.55	3.89
	(12.28)	(13.30)	(14.89)	(15.57)	(11.15)	(11.34)	(9.20)	(9.84)
MERCHANDISE	1.82	2.05	2.38	2.82	3.10	3.43	3.76	4.14
	(10.36)	(12.69)	(15.90)	(18.48)	(9.78)	(10.92)	(9.46)	(10.19)
SERVICES	1.57	1.81	2.01	2.21	2.53	2.83	3.09	3.38
	(17.12)	(15.38)	(11.09)	(10.03)	(14.45)	(12.06)	(9.00)	(9.65)
GROSS NATIONAL PRODUCT	1.71	1.82	2.01	2.23	2.45	2.74	3.01	3.28
	(7.05)	(6.34)	(10.36)	(10.63)	(10.00)	(11.82)	(10.00)	(8.71)

	1985	1986	1987	1988	1989	1990
PERSONAL CONSUMPTION EXPENDITURES. TOTAL	3.26	3.52	3.78	4.03	4.34	4.63
	(8.48)	(7.90)	(7.35)	(6.68)	(7.51)	(6.80)
DURABLE GOODS	2.79	3.03	3.28	3.50	3.77	4.04
	(9.86)	(8.93)	(8.03)	(6.92)	(7.69)	(6.97)
GOVERNMENT						
CURRENT	4.07	4.39	4.76	5.10	5.48	5.87
	(7.76)	(7.96)	(8.35)	(7.31)	(7.46)	(7.02)
GROSS FIXED CAPITAL FORMATION	3.28	3.62	3.90	4.16	4.49	4.82
	(9.12)	(10.16)	(7.81)	(6.67)	(7.99)	(7.27)
BUSINESS GROSS FIXED CAPITAL FORMATION,TOTAL	3.55	3.84	4.07	4.31	4.64	5.00
	(9.23)	(8.13)	(6.03)	(5.97)	(7.73)	(7.74)
RESIDENTIAL CONSTRUCTION	4.39	4.86	5.28	5.72	6.38	7.17
	(10.69)	(10.53)	(8.68)	(8.41)	(11.54)	(12.32)
NON-RESIDENTIAL CONSTRUCTION	3.47	3.79	4.03	4.29	4.61	4.94
	(10.43)	(9.25)	(6.23)	(6.49)	(7.41)	(7.16)
MACHINERY AND EQUIPMENT	3.29	3.51	3.70	3.88	4.15	4.44
	(7.23)	(6.72)	(5.43)	(4.88)	(6.89)	(6.94)
EXPORTS, TOTAL	4.75	5.28	5.81	6.41	7.05	7.76
	(10.02)	(11.18)	(10.08)	(10.25)	(10.10)	(9.97)
MERCHANDISE	4.93	5.49	6.06	6.71	7.42	8.20
	(9.84)	(11.38)	(10.28)	(10.77)	(10.53)	(10.60)
SERVICES	3.98	4.37	4.78	5.18	5.63	6.09
	(10.89)	(9.85)	(9.55)	(8.32)	(8.73)	(8.04)
IMPORTS, TOTAL	4.28	4.68	5.05	5.39	5.89	6.37
	(9.82)	(9.50)	(7.76)	(6.86)	(9.15)	(8.26)
MERCHANDISE	4.54	4.95	5.29	5.59	6.09	6.55
	(9.51)	(9.19)	(6.88)	(5.56)	(8.97)	(7.54)
SERVICES	3.73	4.12	4.52	4.98	5.46	5.99
	(10.38)	(10.24)	(9.70)	(10.25)	(9.54)	(9.73)
GROSS NATIONAL PRODUCT	3.55	3.85	4.15	4.46	4.80	5.16
	(8.38)	(8.40)	(7.77)	(7.62)	(7.65)	(7.44)

NOTE: See note to Table 2.21.

Table 2.25
The labour market

	1977	1978	1979	1980	1981	1982	1983	1984
POPULATION AGED 15 YEARS AND OVER	17057	17381	17721	18043	18296	18564	18808	19045
	(2.10)	(1.90)	(1.96)	(1.81)	(1.40)	(1.47)	(1.31)	(1.26)
LABOUR FORCE	10501	10883	11205	11523	11837	12094	12408	12632
	(2.85)	(3.63)	(2.96)	(2.84)	(2.73)	(2.17)	(2.59)	(1.80)
EMPLOYED	9649	9971	10368	10656	10940	11077	11410	11733
	(1.75)	(3.34)	(3.99)	(2.77)	(2.67)	(1.25)	(3.01)	(2.83)
EMPLOYED IN PRIVATE SECTOR	8414	8748	9120	9508	9815	9931	10243	10545
	(2.17)	(3.97)	(4.26)	(4.25)	(3.23)	(1.18)	(3.14)	(2.95)
GOVERNMENT CIVILIAN EMPLOYMENT	1235	1223	1248	1148	1126	1146	1167	1188
	(-1.02)	(-0.97)	(2.04)	(-8.02)	(-1.90)	(1.81)	(1.81)	(1.81)
CANADIAN ARMED FORCES	81	81	81	80	80	80	80	80
	(0.0)	(0.0)	(-0.62)	(-0.62)	(0.0)	(0.0)	(0.0)	(0.0)
AVERAGE ANNUAL WAGE OF PRIVATE EMPLOYEES	11.008	11.522	12.449	13.518	15.094	16.703	18.270	19.835
	(7.49)	(4.67)	(8.04)	(8.59)	(11.66)	(10.66)	(9.38)	(8.56)
AVERAGE ANNUAL WAGE OF ARMED FORCES	18.901	18.938	19.231	20.787	23.044	25.375	27.458	28.801
	(5.37)	(0.20)	(1.54)	(8.09)	(10.86)	(10.11)	(8.21)	(4.89)
UNEMPLOYMENT RATE	8.12	8.38	7.47	7.53	7.57	8.41	8.04	7.12
LABOUR FORCE PARTICIPATION RATES								
FEMALES 15-24 YEARS	57.49	58.94	60.80	62.41	62.79	63.06	64.95	64.23
FEMALES 25-54 YEARS	53.65	56.59	57.66	59.90	60.80	61.74	64.26	64.30
FEMALES 55 YEARS AND OVER	17.95	18.24	18.44	18.21	18.32	18.18	18.67	18.32
MALES 15-24 YEARS	68.88	69.70	71.22	71.75	72.94	74.20	76.44	75.41
MALES 25-54 YEARS	94.65	95.00	94.78	94.51	95.59	97.12	99.31	97.26
MALES 55 YEARS AND OVER	47.50	47.12	46.78	46.20	46.23	46.62	47.63	46.53
OVERALL RATE	61.57	62.61	63.23	63.86	64.70	65.15	65.97	66.33

	1985	1986	1987	1988	1989	1990
POPULATION AGED 15 YEARS AND OVER	19284	19516	19726	19924	20113	20305
	(1.25)	(1.20)	(1.08)	(1.00)	(0.95)	(0.95)
LABOUR FORCE	12894	13171	13409	13714	14022	14353
	(2.08)	(2.15)	(1.81)	(2.27)	(2.25)	(2.36)
EMPLOYED	12008	12282	12570	12879	13199	13535
	(2.34)	(2.28)	(2.35)	(2.46)	(2.48)	(2.54)
EMPLOYED IN PRIVATE SECTOR	10798	11050	11316	11603	11899	12211
	(2.41)	(2.33)	(2.41)	(2.53)	(2.55)	(2.62)
GOVERNMENT CIVILIAN EMPLOYMENT	1210	1232	1254	1277	1300	1323
	(1.81)	(1.81)	(1.81)	(1.81)	(1.81)	(1.81)
CANADIAN ARMED FORCES	80	80	80	80	80	80
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
AVERAGE ANNUAL WAGE OF PRIVATE EMPLOYEES	21.501	23.369	25.347	27.280	29.264	31.314
	(8.40)	(8.69)	(8.47)	(7.62)	(7.27)	(7.00)
AVERAGE ANNUAL WAGE OF ARMED FORCES	30.096	31.764	33.486	34.741	35.918	37.145
	(4.50)	(5.54)	(5.42)	(3.75)	(3.39)	(3.42)
UNEMPLOYMENT RATE	6.87	6.76	6.26	6.09	5.88	5.70
LABOUR FORCE PARTICIPATION RATES						
FEMALES 15-24 YEARS	64.78	65.66	66.52	67.80	69.13	70.60
FEMALES 25-54 YEARS	65.67	67.29	68.83	70.73	72.63	74.64
FEMALES 55 YEARS AND OVER	18.21	18.19	18.16	18.25	18.38	18.55
MALES 15-24 YEARS	75.85	76.53	77.08	78.01	78.94	79.99
MALES 25-54 YEARS	97.21	97.38	97.31	97.64	97.88	98.21
MALES 55 YEARS AND OVER	46.29	46.16	45.91	45.85	45.79	45.78
OVERALL RATE	66.86	67.49	67.98	68.83	69.72	70.69

NOTE: Persons and dollars in thousands; percentage changes in parentheses.

Table 2.26
National and personal income

	1977	1978	1979	1980	1981	1982	1983	1984
WAGES SALARIES AND SUPPLEMENTARY LABOUR INCOME	118992	129848	145091	162373	183482	205772	231813	258735
	(10.26)	(9.12)	(11.74)	(11.91)	(13.00)	(12.15)	(12.66)	(11.61)
MILITARY PAY AND ALLOWANCES	1531	1534	1548	1663	1844	2030	2196	2304
	(5.37)	(0.20)	(0.91)	(7.43)	(10.86)	(10.11)	(8.20)	(4.91)
CORPORATION PROFITS BEFORE TAXES AND BEFORE DIVIDENDS TO NON-RESIDENTS	20928	25614	34884	37172	38045	43147	50926	58261
	(4.72)	(22.39)	(36.19)	(6.56)	(2.35)	(13.41)	(18.03)	(14.40)
NET INCOME OF UNINCORPORATED BUSINESS	11944	13229	14486	15407	15192	10349	12538	13725
	(1.61)	(10.76)	(9.50)	(6.36)	(-1.39)	(-31.88)	(21.16)	(9.46)
OTHER INCOME	22935	26094	30502	33714	36881	35858	42586	48094
	(8.44)	(13.77)	(16.89)	(10.53)	(9.39)	(-2.77)	(18.76)	(12.93)
INVENTORY VALUATION ADJUSTMENT	-3419	-4577	-6718	-6841	-6497	-7349	-5190	-2068
NET NATIONAL INCOME	161029	178576	205370	228145	253818	279522	322398	365391
	(8.43)	(10.90)	(15.00)	(11.09)	(11.25)	(10.13)	(15.34)	(13.34)
INDIRECT TAXES LESS SUBSIDIES	23907	25854	27925	29191	38117	46691	53196	58438
	(11.09)	(8.14)	(8.01)	(4.53)	(30.58)	(22.49)	(13.93)	(9.85)
CAPITAL CONSUMPTION ALLOWANCES AND MISC. VALUATION ADJUSTMENTS	23043	25662	28854	32174	34494	40821	44058	50589
	(11.11)	(11.37)	(12.44)	(11.51)	(7.21)	(18.34)	(7.93)	(14.82)
STATISTICAL DISCREPANCY	24794	26113	27735	29537	38805	47677	54185	59410
GROSS NATIONAL PRODUCT	208868	230353	261961	289859	327120	368023	420644	475395
	(9.34)	(10.29)	(13.72)	(10.65)	(12.85)	(12.50)	(14.30)	(13.02)
PERSONAL INCOME	171303	190067	211394	237272	268861	298467	338767	377572
	(10.27)	(10.95)	(11.22)	(12.24)	(13.31)	(11.01)	(13.50)	(11.45)
PERSONAL DISPOSABLE INCOME	138094	154623	172308	192572	216449	241507	272882	304982
	(10.03)	(11.97)	(11.44)	(11.76)	(12.40)	(11.58)	(12.99)	(11.76)
PERSONAL SAVING	13367	16702	17806	19459	19825	20389	24793	28196
	(6.43)	(24.95)	(6.61)	(9.28)	(1.88)	(2.84)	(21.60)	(13.72)
PERSONAL SAVING RATE (PER CENT)	9.66	10.80	10.32	10.11	9.15	8.44	9.05	9.23
	(-3.62)	(11.84)	(-4.48)	(-2.01)	(-9.53)	(-7.77)	(7.26)	(1.96)
PERSONAL DISPOSABLE INCOME IN CONSTANT (1971) DOLLARS	87236	90928	92810	93865	94816	94693	98152	101349
	(2.41)	(4.23)	(2.07)	(1.14)	(1.01)	(-0.13)	(3.65)	(3.26)

	1985	1986	1987	1988	1989	1990
WAGES SALARIES AND SUPPLEMENTARY LABOUR INCOME	286653	317261	351371	387268	425526	466032
	(10.79)	(10.68)	(10.75)	(10.22)	(9.88)	(9.52)
MILITARY PAY AND ALLOWANCES	2408	2541	2679	2779	2873	2972
	(4.50)	(5.52)	(5.44)	(3.75)	(3.39)	(3.42)
CORPORATION PROFITS BEFORE TAXES AND BEFORE DIVIDENDS TO NON-RESIDENTS	72377	85075	96406	110011	124072	138904
	(24.23)	(17.55)	(13.32)	(14.11)	(12.78)	(11.95)
NET INCOME OF UNINCORPORATED BUSINESS	12217	13078	13745	16435	19695	27627
	(-10.99)	(7.05)	(5.11)	(19.57)	(19.83)	(40.27)
OTHER INCOME	49029	53866	59942	68589	76832	90261
	(1.95)	(9.87)	(11.28)	(14.43)	(12.02)	(17.48)
INVENTORY VALUATION ADJUSTMENT	-4743	-5691	-6936	-7519	-8094	-8793
NET NATIONAL INCOME	405790	453119	503528	561197	621279	689445
	(11.06)	(11.66)	(11.12)	(11.45)	(10.71)	(10.97)
INDIRECT TAXES LESS SUBSIDIES	67147	75692	85378	94349	105050	117113
	(14.90)	(12.73)	(12.80)	(10.51)	(11.34)	(11.48)
CAPITAL CONSUMPTION ALLOWANCES AND MISC. VALUATION ADJUSTMENTS	57557	65186	73042	83324	95377	108458
	(13.77)	(13.25)	(12.05)	(14.08)	(14.46)	(13.71)
STATISTICAL DISCREPANCY	68130	76664	86348	95318	106007	118071
GROSS NATIONAL PRODUCT	531482	594974	662924	739846	822671	915982
	(11.80)	(11.95)	(11.42)	(11.60)	(11.19)	(11.34)
PERSONAL INCOME	416803	462290	512441	567183	627025	695197
	(10.39)	(10.91)	(10.85)	(10.68)	(10.55)	(10.87)
PERSONAL DISPOSABLE INCOME	337799	374913	416565	463079	512282	568423
	(10.76)	(10.99)	(11.11)	(11.17)	(10.63)	(10.96)
PERSONAL SAVING	29231	31261	35369	43162	46399	53469
	(3.67)	(6.94)	(13.14)	(22.03)	(7.50)	(15.24)
PERSONAL SAVING RATE (PER CENT)	8.62	8.31	8.47	9.31	9.05	9.39
	(-6.55)	(-3.61)	(1.87)	(9.92)	(-2.79)	(3.82)
PERSONAL DISPOSABLE INCOME IN CONSTANT (1971) DOLLARS	103469	106435	110172	114805	118141	122741
	(2.09)	(2.87)	(3.51)	(4.21)	(2.91)	(3.89)

NOTE: Levels in millions of current dollars;
percentage changes in parentheses.

Table 2.27
Financial variables

	1977	1978	1979	1980	1981	1982	1983	1984
MILLIONS OF DOLLARS								
NARROWLY DEFINED MONEY SUPPLY	19883	21717	23158	24661	25466	26994	28614	30331
	(9.28)	(9.22)	(6.64)	(6.49)	(3.26)	(6.00)	(6.00)	(6.00)
BROADLY DEFINED MONEY SUPPLY	85343	95465	113995	131200	140890	159005	179020	200252
	(15.09)	(11.86)	(19.41)	(15.09)	(7.39)	(12.86)	(12.59)	(11.86)
RATIO								
VELOCITY OF NARROWLY DEFINED MONEY SUPPLY	10.52	10.62	11.32	11.77	12.85	13.64	14.71	15.68
VELOCITY OF BROADLY DEFINED MONEY SUPPLY	2.45	2.41	2.30	2.21	2.32	2.31	2.35	2.37
PER CENT								
YIELD ON 90-DAY FINANCE COMPANY PAPER	7.31	9.09	12.16	13.85	18.16	17.84	15.11	13.21
YIELD ON 1-3 YEAR GOVERNMENT OF CANADA BONDS	7.39	8.92	10.83	12.60	15.87	15.55	14.01	12.38
YIELD ON 3-5 YEAR GOVERNMENT OF CANADA BONDS	7.83	9.11	10.55	12.42	15.60	15.55	13.22	12.13
YIELD ON 10 YR AND OVER GOVT OF CANADA BONDS	8.73	9.31	10.33	12.60	15.21	15.30	13.16	12.11
YIELD ON MYW INDUSTRIAL BOND RATE	9.69	10.04	10.99	13.35	16.15	16.47	14.17	12.91
YIELD ON 90-DAY U.S. TRASURY BILLS	5.27	7.19	10.07	11.43	14.60	15.00	13.00	11.40
YIELD ON 90-DAY EURODOLLARS	6.01	8.73	11.97	14.02	17.00	17.00	14.30	12.80
YIELD ON 3-5 YEAR U.S. GOVERNMENT BONDS	6.84	8.30	9.61	10.51	14.00	14.10	12.20	11.50
REAL RATE ON 90-DAY FINANCE COMPANY PAPER	-1.04	0.40	2.38	4.41	8.62	7.38	4.58	3.55
REAL RATE ON 3-5 YEAR GOVT OF CANADA BONDS	-0.81	0.18	1.35	3.27	6.52	5.12	3.50	2.93
REAL INTERNAL,AFTER-TAX RATE OF RETURN TO CORPORATE SECTOR FROM NEW INVESTMENT IN NON-RESIDENTIAL STRUCTURES	5.51	5.46	5.96	5.75	4.42	3.46	4.38	4.99

	1985	1986	1987	1988	1989	1990
	MILLIONS OF DOLLARS					
NARROWLY DEFINED MONEY SUPPLY	31847	33439	35111	36867	38710	40646
	(5.00)	(5.00)	(5.00)	(5.00)	(5.00)	(5.00)
BROADLY DEFINED MONEY SUPPLY	221001	244451	273056	307512	346363	392214
	(10.36)	(10.61)	(11.70)	(12.62)	(12.63)	(13.24)
	RATIO					
VELOCITY OF NARROWLY DEFINED MONEY SUPPLY	16.70	17.80	18.89	20.08	21.27	22.55
VELOCITY OF BROADLY DEFINED MONEY SUPPLY	2.40	2.43	2.43	2.41	2.37	2.34
	PER CENT					
YIELD ON 90-DAY FINANCE COMPANY PAPER	12.82	12.24	11.70	11.35	11.37	10.83
YIELD ON 1-3 YEAR GOVERNMENT OF CANADA BONDS	12.50	12.49	11.81	11.34	11.34	10.93
YIELD ON 3-5 YEAR GOVERNMENT OF CANADA BONDS	12.40	12.21	11.70	11.27	11.23	10.85
YIELD ON 10 YR AND OVER GOVT OF CANADA BONDS	12.59	12.60	12.45	12.20	11.98	11.68
YIELD ON MYW INDUSTRIAL BOND RATE	12.80	12.60	12.43	12.15	11.94	11.54
YIELD ON 90-DAY U.S. TRASURY BILLS	11.40	10.50	9.90	9.80	9.70	9.60
YIELD ON 90-DAY EURODOLLARS	12.80	11.80	11.20	11.10	11.00	10.80
YIELD ON 3-5 YEAR U.S. GOVERNMENT BONDS	11.50	11.40	11.20	11.00	10.80	10.70
REAL RATE ON 90-DAY FINANCE COMPANY PAPER	3.95	3.83	3.10	3.57	3.96	3.29
REAL RATE ON 3-5 YEAR GOVT OF CANADA BONDS	3.59	3.91	3.29	3.74	4.08	3.51
REAL INTERNAL,AFTER-TAX RATE OF RETURN TO CORPORATE SECTOR FROM NEW INVESTMENT IN NON-RESIDENTIAL STRUCTURES	5.39	5.70	6.08	6.41	6.43	6.28

NOTE: See note to Table 2.21.

Table 2.28
Sources and disposition of savings

	1977	1978	1979	1980	1981	1982	1983	1984
GROSS DOMESTIC CAPITAL FORMATION								
BUSINESS GROSS FIXED CAPITAL FORMATION	41403	45150	53198	60510	69339	77321	89677	102275
	(7.33)	(9.05)	(17.83)	(13.74)	(14.59)	(11.51)	(15.98)	(14.05)
CHANGE IN BUSINESS INVENTORIES	331	303	4105	-1261	1307	1236	2122	4778
GOVERNMENT GROSS CAPITAL FORMATION	6833	7198	7457	8084	8840	10369	11363	12533
	(7.45)	(5.34)	(3.60)	(8.41)	(9.35)	(17.30)	(9.58)	(10.30)
FINANCING OF CAPITAL FORMATION								
PERSONAL SAVING	13367	16702	17806	19459	19825	20389	24793	28196
	(6.43)	(24.95)	(6.61)	(9.28)	(1.88)	(2.84)	(21.60)	(13.72)
UNDISTRIBUTED CORPORATE PROFITS	9239	10817	18597	18805	17854	19459	22575	25601
	(-0.23)	(17.08)	(71.92)	(1.12)	(-5.06)	(8.99)	(16.01)	(13.41)
PUBLIC SECTOR SURPLUS (+) OR DEFICIT (-)	-5005	-6954	-4691	-5983	-1798	-3984	-2132	-2333
CURRENT ACCOUNT DEFICIT (+) OR SURPLUS (-) WITH NON-RESIDENTS	4301	4935	4894	1904	6445	8844	5947	4035
CAPITAL CONSUMPTION ALLOWANCES (NON-GOV'T)	19886	22152	24870	27550	29381	35162	37819	43780
	(11.01)	(11.39)	(12.27)	(10.78)	(6.65)	(19.68)	(7.56)	(15.76)
INVENTORY VALUATION ADJUSTMENT	-3419	-4577	-6718	-6841	-6497	-7349	-5190	-2068
OTHER[a]	10198	9576	10002	12439	14278	16406	19350	22375
	(24.84)	(-6.10)	(4.45)	(24.37)	(14.78)	(14.90)	(17.95)	(15.63)

	1985	1986	1987	1988	1989	1990
GROSS DOMESTIC CAPITAL FORMATION						
BUSINESS GROSS FIXED CAPITAL FORMATION	118456	134999	152636	172047	195238	221699
	(15.82)	(13.97)	(13.06)	(12.72)	(13.48)	(13.55)
CHANGE IN BUSINESS INVENTORIES	4915	5174	5467	6016	6654	7422
GOVERNMENT GROSS CAPITAL FORMATION	14186	16240	18215	20225	22740	25405
	(13.19)	(14.48)	(12.16)	(11.04)	(12.44)	(11.72)
FINANCING OF CAPITAL FORMATION						
PERSONAL SAVING	29231	31261	35369	43162	46399	53469
	(3.67)	(6.94)	(13.14)	(22.03)	(7.50)	(15.24)
UNDISTRIBUTED CORPORATE PROFITS	32000	36901	41313	47242	52703	59010
	(25.00)	(15.31)	(11.96)	(14.35)	(11.56)	(11.97)
PUBLIC SECTOR SURPLUS (+) OR DEFICIT (-)	236	3099	5178	5416	6497	7128
CURRENT ACCOUNT DEFICIT (+) OR SURPLUS (-) WITH NON-RESIDENTS	5546	5666	6276	2134	4197	4652
CAPITAL CONSUMPTION ALLOWANCES (NON-GOV'T)	49977	56610	63391	72592	83449	95223
	(14.15)	(13.27)	(11.98)	(14.52)	(14.96)	(14.11)
INVENTORY VALUATION ADJUSTMENT	-4743	-5691	-6936	-7519	-8094	-8793
OTHER[a]	25309	28568	31727	35261	39481	43836
	(13.11)	(12.88)	(11.06)	(11.14)	(11.97)	(11.03)

NOTES: See note to Table 2.26.

[a] Includes government gross capital formation, profits of government enterprises, capital assistance, net transfers on current account, grain adjustments, and residual error.

Table 2.29
Combined-public-sector surplus or deficit

	1977	1978	1979	1980	1981	1982	1983	1984
FEDERAL	-7303	-10654	-9213	-10697	-6770	-8195	-6538	-6994
	(-3912)	(-3351)	(1441)	(-1484)	(3926)	(-1425)	(1657)	(-455)
PROVINCIAL	-734	1049	772	1565	1857	982	1235	1367
	(809)	(1783)	(-277)	(793)	(292)	(-874)	(252)	(132)
LOCAL	159	-137	789	98	-192	-162	-153	-130
	(928)	(-296)	(926)	(-691)	(-290)	(30)	(9)	(23)
PUBLIC HOSPITALS	635	339	268	49	-13	-13	-13	-14
	(337)	(-296)	(-71)	(-219)	(-62)	(0)	(0)	(0)
CANADA & QUEBEC PENSION PLANS	2238	2449	2693	3002	3321	3404	3338	3438
	(55)	(211)	(244)	(309)	(319)	(84)	(-65)	(100)
COMBINED PUBLIC SECTOR	-5005	-6954	-4691	-5983	-1798	-3984	-2132	-2333
	(-1783)	(-1949)	(2263)	(-1292)	(4184)	(-2185)	(1852)	(-200)

	1985	1986	1987	1988	1989	1990
FEDERAL	-4503	-1888	-209	-396	627	1439
	(2491)	(2616)	(1679)	(-187)	(1024)	(811)
PROVINCIAL	1333	1420	1631	1978	2076	1983
	(-34)	(87)	(211)	(347)	(99)	(-93)
LOCAL	-117	-116	-78	-77	-115	-74
	(13)	(1)	(38)	(1)	(-38)	(41)
PUBLIC HOSPITALS	-14	-15	-15	-15	-16	-16
	(0)	(-1)	(0)	(0)	(0)	(0)
CANADA & QUEBEC PENSION PLANS	3539	3699	3850	3928	3925	3797
	(100)	(160)	(152)	(77)	(-3)	(-127)
COMBINED PUBLIC SECTOR	236	3099	5178	5416	6497	7128
	(2570)	(2862)	(2079)	(238)	(1081)	(632)

NOTE: + indicates a surplus, – indicates a deficit.
All figures in millions of dollars. Level changes in parentheses.

Table 2.30
Federal government's revenues and expenditures

	1977	1978	1979	1980	1981	1982	1983	1984
REVENUES								
INDIRECT TAXES	9085	9750	10661	12131	19570	24502	27512	30291
	(5.63)	(7.32)	(9.34)	(13.79)	(61.32)	(25.20)	(12.29)	(10.10)
DIRECT TAXES - CORP. & GOV'T. BUS. ENT.	5157	5786	6887	8002	9260	11265	13705	15297
	(2.20)	(12.20)	(19.03)	(16.19)	(15.73)	(21.65)	(21.66)	(11.62)
DIRECT TAXES & TRANSFERS FROM PERSONS	18055	17722	20274	23454	27939	30616	36878	41373
	(0.01)	(-1.84)	(14.40)	(15.69)	(19.12)	(9.58)	(20.45)	(12.19)
DIRECT TAXES ON NONRESIDENTS	534	582	754	995	1048	1068	1218	1378
INVESTMENT INCOME	3124	3879	4199	4718	4754	5221	6333	7394
NET TRANSF FROM (+), TO (-) OTHER GOV'TS *	-9967	-10875	-11754	-12828	-14575	-16688	-18691	-20560
	(16.96)	(9.11)	(8.08)	(9.14)	(13.62)	(14.50)	(12.00)	(10.00)
EXPENDITURES								
CURRENT EXP. ON GOODS & SERVICES	11143	11981	12750	13707	15580	17553	19414	21363
	(15.23)	(7.52)	(6.42)	(7.51)	(13.66)	(12.66)	(10.60)	(10.04)
GROSS CAPITAL FORMATION	1163	1206	911	1014	1295	1575	1787	2016
	(0.43)	(3.70)	(-24.46)	(11.31)	(27.67)	(21.64)	(13.49)	(12.82)
TRANSFERS TO PERSONS	13089	14647	14657	16574	19274	23062	26765	29122
	(13.49)	(11.90)	(0.07)	(13.08)	(16.29)	(19.66)	(16.06)	(8.81)
SUBSIDIES	2222	2301	3220	5486	7046	7255	7466	8893
	(-7.34)	(3.56)	(39.94)	(70.37)	(28.43)	(2.98)	(2.90)	(19.11)
CAPITAL ASSISTANCE	497	556	546	707	853	852	2332	3909
TRANSFERS TO NONRESIDENTS	630	1003	756	804	723	777	841	910
INTEREST ON THE PUBLIC DEBT	5101	6410	8080	9653	11576	14108	16004	17182
	(12.88)	(25.66)	(26.05)	(19.47)	(19.92)	(21.87)	(13.44)	(7.36)
CAPITAL CONSUMPTION ALLOWANCES	554	606	686	776	895	1004	1115	1228
SURPLUS (+) OR DEFICIT (-)	-7303	-10654	-9213	-10697	-6770	-8195	-6538	-6994
	(-3912)	(-3351)	(1441)	(-1484)	(3926)	(-1425)	(1657)	(-455)

	1985	1986	1987	1988	1989	1990
REVENUES						
INDIRECT TAXES	35674	40693	46176	50725	56534	63367
	(17.77)	(14.07)	(13.47)	(9.85)	(11.45)	(12.09)
DIRECT TAXES - CORP. & GOV'T. BUS. ENT.	19427	22907	25127	27851	30804	33683
	(27.00)	(17.91)	(9.69)	(10.84)	(10.60)	(9.35)
DIRECT TAXES & TRANSFERS FROM PERSONS	44060	49104	53966	58584	64534	71347
	(6.49)	(11.45)	(9.90)	(8.56)	(10.16)	(10.56)
DIRECT TAXES ON NONRESIDENTS	1541	1765	2022	2242	2564	2882
INVESTMENT INCOME	8061	8873	9944	10918	11830	12866
NET TRANSF FROM (+), TO (-) OTHER GOV'TS *	-22410	-24427	-26626	-28756	-31056	-33541
	(9.00)	(9.00)	(9.00)	(8.00)	(8.00)	(8.00)
EXPENDITURES						
CURRENT EXP. ON GOODS & SERVICES	23270	25612	28193	30897	33694	37610
	(8.93)	(10.06)	(10.08)	(9.59)	(9.05)	(11.62)
GROSS CAPITAL FORMATION	2340	2751	3172	3620	4185	4806
	(16.04)	(17.57)	(15.29)	(14.15)	(15.60)	(14.84)
TRANSFERS TO PERSONS	32184	35669	39318	43195	47529	52116
	(10.51)	(10.83)	(10.23)	(9.86)	(10.03)	(9.65)
SUBSIDIES	10146	11683	12947	14431	16277	18579
	(14.09)	(15.15)	(10.82)	(11.46)	(12.79)	(14.14)
CAPITAL ASSISTANCE	4840	5759	6680	7959	9460	11025
TRANSFERS TO NONRESIDENTS	983	1061	1146	1238	1337	1444
INTEREST ON THE PUBLIC DEBT	18476	19849	21165	22651	24390	26166
	(7.53)	(7.43)	(6.63)	(7.02)	(7.68)	(7.28)
CAPITAL CONSUMPTION ALLOWANCES	1381	1580	1801	2030	2290	2581
SURPLUS (+) OR DEFICIT (-)	-4503	-1888	-209	-396	627	1439
	(2491)	(2616)	(1679)	(-187)	(1024)	(811)

NOTE: See note to Table 2.26.
* includes 'other revenues'.

Table 2.31
Provincial governments' revenues and expenditures

	1977	1978	1979	1980	1981	1982	1983	1984
REVENUES								
INDIRECT TAXES	10039	10536	12009	13109	15185	17477	19752	22198
	(10.60)	(4.95)	(13.98)	(9.16)	(15.83)	(15.10)	(13.02)	(12.38)
DIRECT TAXES - CORP. & GOV'T. BUS. ENT.	2099	2455	3140	3606	3842	5046	5757	6421
	(1.55)	(16.96)	(27.90)	(14.84)	(6.55)	(31.33)	(14.09)	(11.53)
DIRECT TAXES & TRANSFERS FROM PERSONS	12604	14843	15550	17520	19933	21674	23982	25665
	(33.32)	(17.76)	(4.76)	(12.67)	(13.77)	(8.73)	(10.65)	(7.02)
INVESTMENT INCOME	5200	6700	7992	9369	11000	13348	16032	18456
	(18.86)	(28.85)	(19.28)	(17.23)	(17.41)	(21.35)	(20.11)	(15.11)
NET TRANSF FROM (+), TO (-) OTHER GOV'TS *	-5535	-5138	-6654	-7012	-7324	-8059	-9013	-9822
	(25.03)	(-7.17)	(29.51)	(5.38)	(4.45)	(10.05)	(11.83)	(8.97)
EXPENDITURES								
CURRENT EXP. ON GOODS & SERVICES	12410	13867	15162	16935	20063	23202	26028	28483
	(14.95)	(11.74)	(9.34)	(11.69)	(18.47)	(15.65)	(12.18)	(9.43)
GROSS CAPITAL FORMATION	2384	2653	2940	3163	3646	4116	4486	4941
	(9.26)	(11.28)	(10.82)	(7.59)	(15.27)	(12.88)	(9.01)	(10.13)
TRANSFERS TO PERSONS	7507	8419	9251	10783	12487	15560	18528	21170
	(13.02)	(12.15)	(9.88)	(16.56)	(15.81)	(24.60)	(19.08)	(14.25)
SUBSIDIES	1098	1159	1392	1457	1378	1446	1511	1673
	(16.07)	(5.56)	(20.10)	(4.67)	(-5.44)	(4.97)	(4.46)	(10.74)
CAPITAL ASSISTANCE	165	154	213	238	384	1042	1385	1581
INTEREST ON THE PUBLIC DEBT	2690	3343	3712	4107	4614	5116	5514	6074
	(15.60)	(24.28)	(11.04)	(10.64)	(12.34)	(10.90)	(7.77)	(10.15)
CAPITAL CONSUMPTION ALLOWANCES	1113	1248	1405	1656	1792	1978	2177	2371
SURPLUS (+) OR DEFICIT (-)	-734	1049	772	1565	1857	982	1235	1367
	(809)	(1783)	(-277)	(793)	(292)	(-874)	(252)	(132)

	1985	1986	1987	1988	1989	1990
REVENUES						
INDIRECT TAXES	24984	28088	31287	34581	38533	43040
	(12.55)	(12.42)	(11.39)	(10.53)	(11.43)	(11.70)
DIRECT TAXES - CORP. & GOV'T. BUS. ENT.	7323	8397	9644	11154	12836	14489
	(14.05)	(14.68)	(14.85)	(15.65)	(15.08)	(12.88)
DIRECT TAXES & TRANSFERS FROM PERSONS	28830	31437	34242	36971	40685	44911
	(12.33)	(9.04)	(8.92)	(7.97)	(10.05)	(10.39)
INVESTMENT INCOME	19593	22218	26121	30585	34478	38380
	(6.16)	(13.40)	(17.56)	(17.09)	(12.73)	(11.32)
NET TRANSF FROM (+), TO (-) OTHER GOV'TS *	-10624	-12001	-13446	-14974	-16398	-18545
	(8.17)	(12.96)	(12.04)	(11.37)	(9.50)	(13.10)
EXPENDITURES						
CURRENT EXP. ON GOODS & SERVICES	30895	33686	36937	40640	44662	48551
	(8.47)	(9.03)	(9.65)	(10.03)	(9.90)	(8.71)
GROSS CAPITAL FORMATION	5575	6360	7108	7866	8817	9823
	(12.83)	(14.08)	(11.76)	(10.67)	(12.09)	(11.41)
TRANSFERS TO PERSONS	24657	28420	33026	36985	41609	46756
	(16.47)	(15.26)	(16.21)	(11.99)	(12.50)	(12.37)
SUBSIDIES	1844	2038	2253	2488	2746	3031
	(10.22)	(10.53)	(10.51)	(10.44)	(10.38)	(10.38)
CAPITAL ASSISTANCE	1620	1691	1822	1976	2161	2271
INTEREST ON THE PUBLIC DEBT	6815	7497	8406	10078	12154	14381
	(12.21)	(10.00)	(12.12)	(19.89)	(20.60)	(18.32)
CAPITAL CONSUMPTION ALLOWANCES	2634	2972	3334	3695	4092	4522
SURPLUS (+) OR DEFICIT (-)	1333	1420	1631	1978	2076	1983
	(-34)	(87)	(211)	(347)	(99)	(-93)

NOTES: See notes to Table 2.30.

Table 2.32
The balance of international payments and the exchange rate

	1977	1978	1979	1980	1981	1982	1983	1984
EXPORTS OF GOODS	44253	53054	65275	76170	84384	95641	111802	127302
	(16.47)	(19.89)	(23.04)	(16.69)	(10.78)	(13.34)	(16.90)	(13.86)
IMPORTS OF GOODS	41523	49047	61125	68360	78753	90165	101315	112268
	(13.43)	(18.12)	(24.63)	(11.84)	(15.20)	(14.49)	(12.37)	(10.81)
BALANCE OF TRADE	2730	4007	4150	7810	5631	5475	10486	15035
CAPITAL SERVICE RECEIPTS	874	1208	1271	1660	1869	2339	2882	3509
	(5.94)	(38.22)	(5.22)	(30.61)	(12.58)	(25.13)	(23.22)	(21.77)
CAPITAL SERVICE PAYMENTS	4532	5904	6512	7204	8274	9483	11367	13798
	(36.38)	(30.27)	(10.30)	(10.63)	(14.86)	(14.61)	(19.87)	(21.38)
BALANCE ON CAPITAL SERVICE	-3658	-4696	-5241	-5544	-6405	-7144	-8485	-10288
EXPORTS OF OTHER SERVICES	7421	8723	10541	12428	13846	15673	17869	20603
	(9.44)	(17.54)	(20.84)	(17.90)	(11.41)	(13.20)	(14.01)	(15.30)
IMPORTS OF OTHER SERVICES	11207	13019	15034	17879	21077	23830	26843	30435
	(11.59)	(16.17)	(15.48)	(18.92)	(17.89)	(13.06)	(12.64)	(13.38)
BALANCE ON SERVICES	-3786	-4296	-4493	-5451	-7231	-8157	-8973	-9831
NET TRANSFER RECEIPTS	413	50	690	1281	1561	983	1025	1052
CURRENT ACCOUNT BALANCE	-4301	-4935	-4894	-1904	-6445	-8844	-5946	-4034
NET LONG-TERM CAPITAL FLOWS	4265	3362	2838	1374	2790	4244	5537	5750
NET SHORT-TERM CAPITAL FLOWS	-1385	-1726	3745	-968	3155	3884	194	-1931
SDRS AND ADJUSTMENT	0	0	219	217	0	216	216	216
CHANGE IN FOREIGN EXCHANGE RESERVES	-1421	-3299	1908	-1281	-500	-500	0	0
	DOLLARS							
EXCHANGE RATE: CDN$/US$	1.06	1.14	1.17	1.17	1.20	1.19	1.18	1.17
	1971=1.0							
TERMS OF TRADE (PX/PM)	1.07	1.03	1.07	1.07	1.06	1.07	1.10	1.11

	1985	1986	1987	1988	1989	1990
EXPORTS OF GOODS	144989	168192	189764	214038	239720	267952
	(13.89)	(16.00)	(12.83)	(12.79)	(12.00)	(11.78)
IMPORTS OF GOODS	128765	148103	167365	182703	206391	232458
	(14.69)	(15.02)	(13.01)	(9.16)	(12.96)	(12.63)
BALANCE OF TRADE	16225	20089	22399	31335	33329	35494
CAPITAL SERVICE RECEIPTS	4150	4909	5803	6802	7950	9199
	(18.27)	(18.30)	(18.21)	(17.20)	(16.88)	(15.71)
CAPITAL SERVICE PAYMENTS	16440	20748	24744	28542	32500	36417
	(19.15)	(26.21)	(19.26)	(15.35)	(13.87)	(12.05)
BALANCE ON CAPITAL SERVICE	-12289	-15838	-18940	-21740	-24550	-27218
EXPORTS OF OTHER SERVICES	23343	26267	30019	34028	38406	43775
	(13.30)	(12.52)	(14.28)	(13.36)	(12.87)	(13.98)
IMPORTS OF OTHER SERVICES	33905	37333	40976	47003	52725	58124
	(11.40)	(10.11)	(9.76)	(14.71)	(12.17)	(10.24)
BALANCE ON SERVICES	-10561	-11065	-10957	-12974	-14318	-14349
NET TRANSFER RECEIPTS	1081	1150	1223	1246	1343	1423
CURRENT ACCOUNT BALANCE	-5546	-5665	-6276	-2133	-4197	-4652
NET LONG-TERM CAPITAL FLOWS	7414	7300	7288	5955	6491	5800
NET SHORT-TERM CAPITAL FLOWS	-2083	-1849	-1228	-4037	-2509	-1363
SDRS AND ADJUSTMENT	216	216	216	216	216	216
CHANGE IN FOREIGN EXCHANGE RESERVES	0	0	0	0	0	0
	DOLLARS					
EXCHANGE RATE: CDN$/US$	1.17	1.16	1.16	1.15	1.15	1.15
	1971=1.0					
TERMS OF TRADE (PX/PM)	1.11	1.13	1.15	1.19	1.20	1.22

NOTE: Levels in millions of dollars unless otherwise indicated; percentage changes in parentheses.

Table 2.33
Canada's real domestic product by industry

	1977	1978	1979	1980	1981	1982	1983	1984
1 AGRICULTURE, FISHING & TRAPPING	3108	3243	3196	3265	3303	3299	3381	3476
2 FORESTRY	678	722	750	736	758	755	792	823
3 MINERAL FUEL MINES & WELLS	1262	1264	1396	1359	1383	1422	1469	1472
4 OTHER MINES & QUARRIES	1985	1772	1907	2027	2024	1956	2008	2045
5 FOOD, FEED, BEVERAGES & TOBACCO	3147	3198	3316	3410	3436	3429	3474	3551
6 TEXTILES & CLOTHING	1580	1652	1773	1750	1748	1692	1703	1747
7 WOOD & FURNITURE	1498	1584	1580	1561	1595	1567	1629	1671
8 PAPER, PRINTING & ALLIED INDUSTRIES	2990	3231	3406	3465	3499	3444	3526	3592
9 PRIMARY METAL & METAL FABRICATING	3816	4030	4148	4231	4249	4124	4281	4451
10 MOTOR VEHICLES & PARTS	1961	2108	1977	1747	1862	1844	1924	2037
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	2164	2326	2534	2277	2247	2172	2313	2500
12 ELECTRICAL PRODUCTS	1562	1599	1720	1707	1678	1599	1664	1744
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	2733	2933	3118	3019	3084	3087	3236	3425
14 NON-METALLIC MINERAL PRODUCTS	880	930	929	862	886	871	916	967
15 OTHER MANUFACTURING INDUSTRIES	903	975	1015	974	936	884	903	942
TOTAL MANUFACTURING	23234	24565	25515	25003	25222	24714	25570	26628
16 CONSTRUCTION	6927	6870	7006	7195	7612	7627	8062	8487
17 ELECTRIC POWER, WATER & GAS UTILITIES	3620	3790	4023	4114	4299	4416	4642	4899
TOTAL GOODS-PRODUCING INDUSTRIES	40814	42225	43794	43699	44601	44190	45924	47828
18 TRANSPORTATION & STORAGE	6531	6696	7034	6924	6978	6935	7121	7334
19 COMMUNICATION	3932	4227	4547	4784	5111	5354	5768	6231
20 TRADE	13412	13876	14271	14143	14572	14557	15075	15587
21 FINANCE, INSURANCE & REAL ESTATE	13851	14364	14828	15553	16169	16452	17165	17959
22 OTHER SERVICE INDUSTRIES	15723	16667	16872	17228	17974	18488	19394	20368
TOTAL SERVICE INDUSTRIES	53450	55829	57551	58631	60805	61787	64523	67480
23 GOVERNMENT SECTOR	13236	13195	13467	12730	12657	12800	13051	13294
TOTAL: ALL SECTORS (GROSS DOMESTIC PRODUCT AT FACTOR COST - REAL)	107499	111249	114812	115061	118064	118777	123498	128602

	1985	1986	1987	1988	1989	1990
1 AGRICULTURE, FISHING & TRAPPING	3549	3657	3728	3818	3892	3960
2 FORESTRY	849	885	912	944	970	996
3 MINERAL FUEL MINES & WELLS	1417	1416	1450	1563	1587	1583
4 OTHER MINES & QUARRIES	2059	2090	2092	2110	2106	2094
5 FOOD, FEED, BEVERAGES & TOBACCO	3605	3683	3744	3816	3878	3937
6 TEXTILES & CLOTHING	1728	1707	1672	1660	1650	1636
7 WOOD & FURNITURE	1708	1762	1803	1847	1876	1905
8 PAPER, PRINTING & ALLIED INDUSTRIES	3631	3705	3731	3780	3808	3834
9 PRIMARY METAL & METAL FABRICATING	4532	4626	4677	4759	4802	4822
10 MOTOR VEHICLES & PARTS	2106	2105	2129	2105	2054	1984
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	2588	2706	2804	2947	3063	3156
12 ELECTRICAL PRODUCTS	1762	1801	1837	1888	1920	1946
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	3539	3674	3782	3927	4051	4170
14 NON-METALLIC MINERAL PRODUCTS	1003	1035	1064	1099	1128	1155
15 OTHER MANUFACTURING INDUSTRIES	927	926	913	919	922	921
TOTAL MANUFACTURING	27130	27729	28156	28747	29152	29465
16 CONSTRUCTION	8932	9314	9757	10201	10599	11019
17 ELECTRIC POWER, WATER & GAS UTILITIES	5126	5392	5669	5975	6266	6593
TOTAL GOODS-PRODUCING INDUSTRIES	49063	50483	51765	53358	54571	55710
18 TRANSPORTATION & STORAGE	7470	7638	7839	8042	8218	8468
19 COMMUNICATION	6699	7221	7771	8368	8992	9711
20 TRADE	15985	16524	17085	17653	18148	18696
21 FINANCE, INSURANCE & REAL ESTATE	18764	19574	20402	21254	22137	23134
22 OTHER SERVICE INDUSTRIES	21397	22526	23684	24873	26084	27586
TOTAL SERVICE INDUSTRIES	70315	73483	76781	80191	83577	87596
23 GOVERNMENT SECTOR	13525	13775	14071	14371	14646	14939
TOTAL: ALL SECTORS (GROSS DOMESTIC PRODUCT AT FACTOR COST - REAL)	132902	137741	142618	147921	152794	158245

NOTE: Levels in millions of 1971 dollars. For definition of government sector, see note a to Table 2.15.

Table 2.33 continued

YEAR-OVER-YEAR PERCENTAGE CHANGE

	1977	1978	1979	1980	1981	1982	1983	1984
1 AGRICULTURE,FISHING & TRAPPING	1.30	4.32	-1.44	2.16	1.17	-0.12	2.50	2.81
2 FORESTRY	6.60	6.55	3.79	-1.83	2.99	-0.34	4.86	3.86
3 MINERAL FUEL MINES & WELLS	2.52	0.18	10.45	-2.62	1.77	2.81	3.28	0.20
4 OTHER MINES & QUARRIES	5.12	-10.70	7.61	6.27	-0.14	-3.33	2.65	1.82
5 FOOD,FEED,BEVERAGES & TOBACCO	0.92	1.62	3.68	2.83	0.78	-0.21	1.31	2.23
6 TEXTILES & CLOTHING	-0.12	4.53	7.35	-1.33	-0.10	-3.18	0.62	2.60
7 WOOD & FURNITURE	1.46	5.76	-0.27	-1.20	2.16	-1.75	3.99	2.59
8 PAPER,PRINTING & ALLIED INDUSTRIES	1.17	8.05	5.41	1.75	0.99	-1.58	2.39	1.87
9 PRIMARY METAL & METAL FABRICATING	2.09	5.61	2.93	2.01	0.42	-2.94	3.81	3.96
10 MOTOR VEHICLES & PARTS	4.66	7.50	-6.21	-11.62	6.58	-0.96	4.29	5.88
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	2.91	7.46	8.97	-10.14	-1.31	-3.37	6.53	8.06
12 ELECTRICAL PRODUCTS	-5.11	2.35	7.60	-0.79	-1.65	-4.72	4.08	4.78
13 CHEMICAL,RUBBER & PETROLEUM PRODUCTS	5.18	7.32	6.31	-3.18	2.16	0.09	4.82	5.84
14 NON-METALLIC MINERAL PRODUCTS	-2.24	5.68	-0.09	-7.15	2.73	-1.70	5.14	5.64
15 OTHER MANUFACTURING INDUSTRIES	-3.80	7.97	4.05	-4.01	-3.86	-5.53	2.11	4.29
TOTAL MANUFACTURING	1.33	5.73	3.87	-2.01	0.87	-2.02	3.46	4.14
16 CONSTRUCTION	-0.81	-0.82	1.99	2.70	5.79	0.20	5.70	5.27
17 ELECTRIC POWER,WATER & GAS UTILITIES	6.45	4.68	6.17	2.25	4.50	2.72	5.11	5.54
TOTAL GOODS-PRODUCING INDUSTRIES	1.68	3.46	3.71	-0.22	2.06	-0.92	3.92	4.15
18 TRANSPORTATION & STORAGE	4.44	2.52	5.05	-1.56	0.78	-0.62	2.69	2.98
19 COMMUNICATION	6.56	7.50	7.57	5.21	6.84	4.75	7.73	8.02
20 TRADE	0.74	3.46	2.84	-0.90	3.04	-0.10	3.56	3.40
21 FINANCE,INSURANCE & REAL ESTATE	5.76	3.70	3.23	4.89	3.96	1.75	4.33	4.63
22 OTHER SERVICE INDUSTRIES	6.30	6.00	1.23	2.11	4.34	2.86	4.90	5.03
TOTAL SERVICE INDUSTRIES	4.51	4.45	3.08	1.88	3.71	1.61	4.43	4.58
23 GOVERNMENT SECTOR	-0.29	-0.31	2.07	-5.47	-0.58	1.13	1.96	1.86
TOTAL: ALL SECTORS (GROSS DOMESTIC PRODUCT AT FACTOR COST - REAL)	2.81	3.49	3.20	0.22	2.61	0.60	3.97	4.13

	1985	1986	1987	1988	1989	1990
1 AGRICULTURE,FISHING & TRAPPING	2.10	3.03	1.95	2.40	1.94	1.76
2 FORESTRY	3.23	4.19	3.11	3.48	2.71	2.66
3 MINERAL FUEL MINES & WELLS	-3.70	-0.11	2.41	7.84	1.48	-0.20
4 OTHER MINES & QUARRIES	0.70	1.48	0.11	0.86	-0.19	-0.58
5 FOOD,FEED,BEVERAGES & TOBACCO	1.51	2.16	1.67	1.91	1.62	1.52
6 TEXTILES & CLOTHING	-1.09	-1.19	-2.05	-0.73	-0.59	-0.90
7 WOOD & FURNITURE	2.20	3.15	2.31	2.44	1.58	1.57
8 PAPER,PRINTING & ALLIED INDUSTRIES	1.09	2.02	0.71	1.33	0.73	0.68
9 PRIMARY METAL & METAL FABRICATING	1.82	2.07	1.12	1.75	0.90	0.42
10 MOTOR VEHICLES & PARTS	3.41	-0.05	1.12	-1.13	-2.42	-3.42
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	3.51	4.58	3.61	5.08	3.94	3.06
12 ELECTRICAL PRODUCTS	1.06	2.18	2.02	2.75	1.73	1.32
13 CHEMICAL,RUBBER & PETROLEUM PRODUCTS	3.32	3.81	2.95	3.84	3.16	2.93
14 NON-METALLIC MINERAL PRODUCTS	3.75	3.11	2.81	3.33	2.65	2.37
15 OTHER MANUFACTURING INDUSTRIES	-1.56	-0.11	-1.45	0.70	0.27	-0.09
TOTAL MANUFACTURING	1.89	2.21	1.54	2.10	1.41	1.07
16 CONSTRUCTION	5.25	4.27	4.77	4.54	3.90	3.97
17 ELECTRIC POWER,WATER & GAS UTILITIES	4.64	5.20	5.14	5.39	4.87	5.21
TOTAL GOODS-PRODUCING INDUSTRIES	2.58	2.89	2.54	3.08	2.27	2.09
18 TRANSPORTATION & STORAGE	1.86	2.25	2.62	2.60	2.18	3.05
19 COMMUNICATION	7.50	7.79	7.63	7.68	7.45	8.00
20 TRADE	2.55	3.37	3.40	3.33	2.80	3.02
21 FINANCE,INSURANCE & REAL ESTATE	4.48	4.32	4.23	4.18	4.15	4.51
22 OTHER SERVICE INDUSTRIES	5.05	5.27	5.14	5.02	4.87	5.76
TOTAL SERVICE INDUSTRIES	4.20	4.51	4.49	4.44	4.22	4.81
23 GOVERNMENT SECTOR	1.74	1.85	2.15	2.13	1.91	2.01
TOTAL: ALL SECTORS (GROSS DOMESTIC PRODUCT AT FACTOR COST - REAL)	3.34	3.64	3.54	3.72	3.29	3.57

Table 2.34
Canada's employment by industry

	1977	1978	1979	1980	1981	1982	1983	1984
1 AGRICULTURE, FISHING & TRAPPING	484	497	513	520	511	497	489	480
2 FORESTRY	70	74	76	76	79	80	83	86
3 MINERAL FUEL MINES & WELLS	30	33	37	41	43	44	45	45
4 OTHER MINES & QUARRIES	124	131	134	152	158	159	167	174
5 FOOD, FEED, BEVERAGES & TOBACCO	260	266	278	294	297	298	300	303
6 TEXTILES & CLOTHING	204	210	220	223	221	212	209	208
7 WOOD & FURNITURE	153	160	169	168	170	166	169	169
8 PAPER, PRINTING & ALLIED INDUSTRIES	242	250	262	273	276	273	277	279
9 PRIMARY METAL & METAL FABRICATING	288	297	315	330	332	324	333	342
10 MOTOR VEHICLES & PARTS	112	117	116	98	106	107	112	119
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	175	191	218	228	223	214	219	226
12 ELECTRICAL PRODUCTS	136	139	147	153	149	141	144	148
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	150	155	164	170	173	172	176	182
14 NON-METALLIC MINERAL PRODUCTS	59	60	63	64	66	66	68	71
15 OTHER MANUFACTURING INDUSTRIES	107	111	118	118	113	106	107	110
TOTAL MANUFACTURING	1888	1956	2069	2121	2127	2080	2114	2156
16 CONSTRUCTION	633	631	640	628	679	695	742	786
17 ELECTRIC POWER, WATER & GAS UTILITIES	103	110	117	115	119	121	125	128
TOTAL GOODS-PRODUCING INDUSTRIES	3329	3429	3582	3648	3710	3676	3765	3855
18 TRANSPORTATION & STORAGE	480	502	525	525	525	520	524	527
19 COMMUNICATION	237	245	257	257	268	273	284	294
20 TRADE	1679	1738	1806	1850	1922	1944	2006	2058
21 FINANCE, INSURANCE & REAL ESTATE	531	546	553	614	641	657	681	704
22 OTHER SERVICE INDUSTRIES	2155	2286	2393	2558	2742	2860	2984	3106
TOTAL SERVICE INDUSTRIES	5085	5319	5538	5805	6099	6255	6478	6689
23 GOVERNMENT SECTOR	1235	1223	1248	1198	1126	1146	1167	1188
TOTAL: ALL SECTORS	9648	9971	10368	10655	10940	11077	11410	11733

	1985	1986	1987	1988	1989	1990
1 AGRICULTURE, FISHING & TRAPPING	470	462	450	440	430	419
2 FORESTRY	88	91	93	96	98	100
3 MINERAL FUEL MINES & WELLS	44	43	44	47	47	47
4 OTHER MINES & QUARRIES	179	185	189	194	199	202
5 FOOD, FEED, BEVERAGES & TOBACCO	305	307	308	310	312	313
6 TEXTILES & CLOTHING	201	193	184	177	171	165
7 WOOD & FURNITURE	168	168	168	167	166	165
8 PAPER, PRINTING & ALLIED INDUSTRIES	279	280	278	278	277	275
9 PRIMARY METAL & METAL FABRICATING	344	346	345	346	346	344
10 MOTOR VEHICLES & PARTS	123	122	124	122	118	114
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	226	226	226	227	228	227
12 ELECTRICAL PRODUCTS	146	146	145	146	146	144
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	184	186	187	189	191	192
14 NON-METALLIC MINERAL PRODUCTS	73	74	76	77	79	80
15 OTHER MANUFACTURING INDUSTRIES	106	104	100	98	97	94
TOTAL MANUFACTURING	2155	2153	2141	2138	2132	2114
16 CONSTRUCTION	834	872	920	970	1020	1069
17 ELECTRIC POWER, WATER & GAS UTILITIES	131	134	138	141	145	149
TOTAL GOODS-PRODUCING INDUSTRIES	3900	3941	3975	4027	4072	4100
18 TRANSPORTATION & STORAGE	526	524	525	526	527	530
19 COMMUNICATION	303	313	323	333	344	356
20 TRADE	2100	2149	2204	2258	2311	2363
21 FINANCE, INSURANCE & REAL ESTATE	729	751	774	797	823	851
22 OTHER SERVICE INDUSTRIES	3240	3372	3515	3662	3824	4012
TOTAL SERVICE INDUSTRIES	6898	7109	7341	7576	7827	8111
23 GOVERNMENT SECTOR	1210	1232	1254	1277	1300	1323
TOTAL: ALL SECTORS	12008	12282	12570	12879	13199	13535

NOTE: Levels in thousands of persons. For definition of government, see note a to Table 2.15.

Table 2.34 continued

YEAR-OVER-YEAR PERCENTAGE CHANGE

	1977	1978	1979	1980	1981	1982	1983	1984
1 AGRICULTURE,FISHING & TRAPPING	-1.62	2.70	3.27	1.31	-1.70	-2.61	-1.68	-1.77
2 FORESTRY	5.86	4.91	3.37	-0.69	3.98	0.81	4.62	3.21
3 MINERAL FUEL MINES & WELLS	13.19	10.15	10.13	13.41	2.59	3.72	2.69	-0.26
4 OTHER MINES & QUARRIES	0.94	5.56	2.18	14.09	3.63	0.66	5.11	3.92
5 FOOD,FEED,BEVERAGES & TOBACCO	0.94	2.14	4.40	5.79	1.18	0.42	0.51	1.04
6 TEXTILES & CLOTHING	-4.80	2.94	4.40	1.78	-1.15	-3.95	-1.64	-0.14
7 WOOD & FURNITURE	-3.16	4.74	5.54	-0.40	1.05	-2.41	1.57	-0.10
8 PAPER,PRINTING & ALLIED INDUSTRIES	-0.13	3.29	4.54	4.26	1.29	-1.16	1.51	0.58
9 PRIMARY METAL & METAL FABRICATING	-1.05	3.02	6.09	4.89	0.64	-2.52	2.80	2.62
10 MOTOR VEHICLES & PARTS	4.68	4.06	-0.64	-15.46	8.35	0.55	4.66	5.96
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	-2.66	8.67	14.37	4.80	-2.52	-3.83	2.20	3.10
12 ELECTRICAL PRODUCTS	-7.08	1.61	6.13	3.99	-2.45	-5.34	2.10	2.51
13 CHEMICAL,RUBBER & PETROLEUM PRODUCTS	1.40	3.44	5.75	3.64	1.38	-0.41	2.66	3.24
14 NON-METALLIC MINERAL PRODUCTS	-2.51	1.78	5.62	1.54	3.11	-0.75	4.09	4.24
15 OTHER MANUFACTURING INDUSTRIES	-6.58	3.35	6.31	0.35	-4.40	-6.11	0.79	2.70
TOTAL MANUFACTURING	-1.74	3.56	5.81	2.49	0.29	-2.22	1.66	1.97
16 CONSTRUCTION	-0.32	-0.30	1.34	-1.84	8.12	2.30	6.74	5.97
17 ELECTRIC POWER,WATER & GAS UTILITIES	3.30	7.66	5.71	-1.81	3.57	2.02	2.93	2.96
TOTAL GOODS-PRODUCING INDUSTRIES	-1.02	3.01	4.47	1.84	1.70	-0.93	2.44	2.39
18 TRANSPORTATION & STORAGE	-1.57	4.47	4.73	-0.12	0.12	-0.99	0.69	0.60
19 COMMUNICATION	-0.39	3.51	5.08	-0.07	4.07	2.15	3.72	3.60
20 TRADE	2.06	3.51	3.92	2.47	3.90	1.12	3.17	2.64
21 FINANCE,INSURANCE & REAL ESTATE	6.90	2.82	1.29	11.10	4.46	2.47	3.58	3.49
22 OTHER SERVICE INDUSTRIES	7.54	6.07	4.71	6.89	7.20	4.29	4.34	4.08
TOTAL SERVICE INDUSTRIES	4.38	4.60	4.12	4.81	5.08	2.55	3.56	3.27
23 GOVERNMENT SECTOR	-1.02	-0.97	2.04	-4.01	-6.00	1.81	1.81	1.81
TOTAL: ALL SECTORS	1.75	3.34	3.99	2.77	2.67	1.25	3.01	2.83

YEAR-OVER-YEAR PERCENTAGE CHANGE

	1985	1986	1987	1988	1989	1990
1 AGRICULTURE, FISHING & TRAPPING	-2.18	-1.76	-2.54	-2.25	-2.23	-2.67
2 FORESTRY	2.78	3.35	2.46	2.76	2.42	2.04
3 MINERAL FUEL MINES & WELLS	-3.40	-0.75	1.56	6.28	1.12	-0.48
4 OTHER MINES & QUARRIES	3.00	3.36	2.21	2.85	2.26	1.56
5 FOOD, FEED, BEVERAGES & TOBACCO	0.55	0.76	0.44	0.58	0.70	0.29
6 TEXTILES & CLOTHING	-3.52	-4.04	-4.75	-3.77	-3.07	-3.89
7 WOOD & FURNITURE	-0.28	0.22	-0.34	-0.27	-0.66	-0.97
8 PAPER, PRINTING & ALLIED INDUSTRIES	-0.03	0.52	-0.65	-0.11	-0.31	-0.68
9 PRIMARY METAL & METAL FABRICATING	0.70	0.54	-0.17	0.35	-0.00	-0.75
10 MOTOR VEHICLES & PARTS	3.58	-0.46	0.91	-1.61	-2.56	-3.75
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	-0.07	0.28	-0.25	0.72	0.39	-0.33
12 ELECTRICAL PRODUCTS	-1.03	-0.34	-0.28	0.26	-0.19	-0.82
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	1.04	1.11	0.48	1.17	1.01	0.44
14 NON-METALLIC MINERAL PRODUCTS	2.69	1.70	1.75	2.23	2.07	1.45
15 OTHER MANUFACTURING INDUSTRIES	-3.47	-2.31	-3.62	-1.78	-1.47	-2.51
TOTAL MANUFACTURING	-0.06	-0.08	-0.57	-0.12	-0.27	-0.87
16 CONSTRUCTION	6.09	4.61	5.53	5.44	5.11	4.82
17 ELECTRIC POWER, WATER & GAS UTILITIES	2.27	2.39	2.51	2.73	2.57	2.64
TOTAL GOODS-PRODUCING INDUSTRIES	1.17	1.03	0.88	1.30	1.12	0.68
18 TRANSPORTATION & STORAGE	-0.25	-0.31	0.23	0.16	0.12	0.69
19 COMMUNICATION	3.25	3.10	3.13	3.14	3.26	3.56
20 TRADE	2.00	2.35	2.57	2.44	2.33	2.25
21 FINANCE, INSURANCE & REAL ESTATE	3.56	2.95	3.04	2.93	3.29	3.39
22 OTHER SERVICE INDUSTRIES	4.31	4.09	4.23	4.19	4.41	4.93
TOTAL SERVICE INDUSTRIES	3.12	3.06	3.26	3.19	3.32	3.63
23 GOVERNMENT SECTOR	1.81	1.81	1.81	1.81	1.81	1.81
TOTAL: ALL SECTORS	2.34	2.28	2.35	2.46	2.48	2.54

3
The Ontario projection

Having obtained our projections for the nation's economy, we can turn our attention to Ontario's. This chapter is devoted to presenting and discussing the results, after examining several key assumptions.[1]

ASSUMPTIONS

In effect, the entire preceding chapter has been a discussion of the assumptions underlying the Ontario projection, for it is the state of the national economy, more than anything else, that determines the future of the Ontario economy. Nonetheless, producing the Ontario projection required additional assumptions in three areas: the provinces' relative growth rates of population, their relative growth rates of labour productivity, and movements in Ontario's share of the outputs of certain industries. These three elements are related and provided crosschecks on each other: relative population growth affects a province's labour supply, while changes in productivity and output shares affect labour demand. If our initial assumptions when combined with the national projection, resulted in a situation for Ontario or other provinces of excess demand or supply of labour - that is, in an unreasonable unemployment rate - the clear signal was that we had to revise one or more of our assumptions.

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[1] These topics frequently require reference to other parts of Canada, so the reader should keep in mind the definitions we have used in describing this country of many regions: unless otherwise qualified, 'the East' means the Atlantic provinces and Quebec, while 'the West' designates Saskatchewan, Alberta, and British Columbia.

Assumptions about labour-force growth in Ontario

Growth rates of the source population drop in all parts of the country because national increase is much reduced (the baby-boom has passed entirely into the source-population age brackets). Quebec has an exceptionally low rate of natural increase, which is one reason why source-population growth in the East is so small.[2]

Of particular interest in the population projections is the large amount of westward migration.[3] The labour force is, of course, the product of the source population and the labour-force participation rate. While participation rates are determined endogenously by the PRISM model, our projections for the source population are exogenous variables.[4] It is useful to examine them and our labour-force projections briefly. Both are summarized in Table 3.1 and Figures 3.1 and 3.2; greater detail can be found in Tables 3.16 and 3.17 at the end of the chapter.

The pattern of westward movement is, of course, quite prominent in the 1974-80 period; it can also be seen in 1967-73, although during the earlier period, Ontario was also a net recipient of migrants and its population grew above the national rate.

In the 1980s, the pattern of considerable westward migration continues. It must not, however, be overemphasized. The present age is not one of massive migrations, such as those at the turn of the century, save in cases of war or other disaster. Within Canada today, people move only to areas that offer them at least some prospect of obtaining housing, social acceptance, and access to social services and education. Such services are generally provided by governments - which respond to the desires of the existing residents, who are often anxious about the possible ill effects and disruptions of heavy in-migration. In short, it seems unlikely that the West, especially Alberta, would accommodate a rate of in-migration much higher than that of the later 1970s and early 1980s. Thus, the assumptions made here are at the high end of the probable range.

Moreover, the PRISM figures for labour-force participation rates serve to

---

[2] Low natural increases are also projected for Manitoba.

[3] In fact, some additional westward migration (largely from the Atlantic provinces) was imposed for the present projections.

[4] The provincial population projection, like the national ones, are taken from work by David Foot (1982).

TABLE 3.1
Growth rate of source population and labour force by province/region

	Annual averages				
	1967-73	1974-80	1981-3	1984-6	1987-90
Labour-force source population					
Canada	2.7	2.1	1.5	1.2	1.0
Ontario	3.0	2.1	1.3	1.1	0.9
East	2.2	1.7	0.8	0.5	0.4
West	3.1	3.0	2.9	2.6	2.1
Alberta	3.4	4.1	3.9	3.4	2.9
Labour force					
Canada	3.1	3.2	2.5	2.0	2.2
Ontario	3.4	3.1	2.3	1.7	1.8
East	2.5	2.6	2.0	1.6	1.8
West	3.7	4.2	3.7	3.0	3.2
Alberta	3.9	5.3	4.7	3.8	4.0

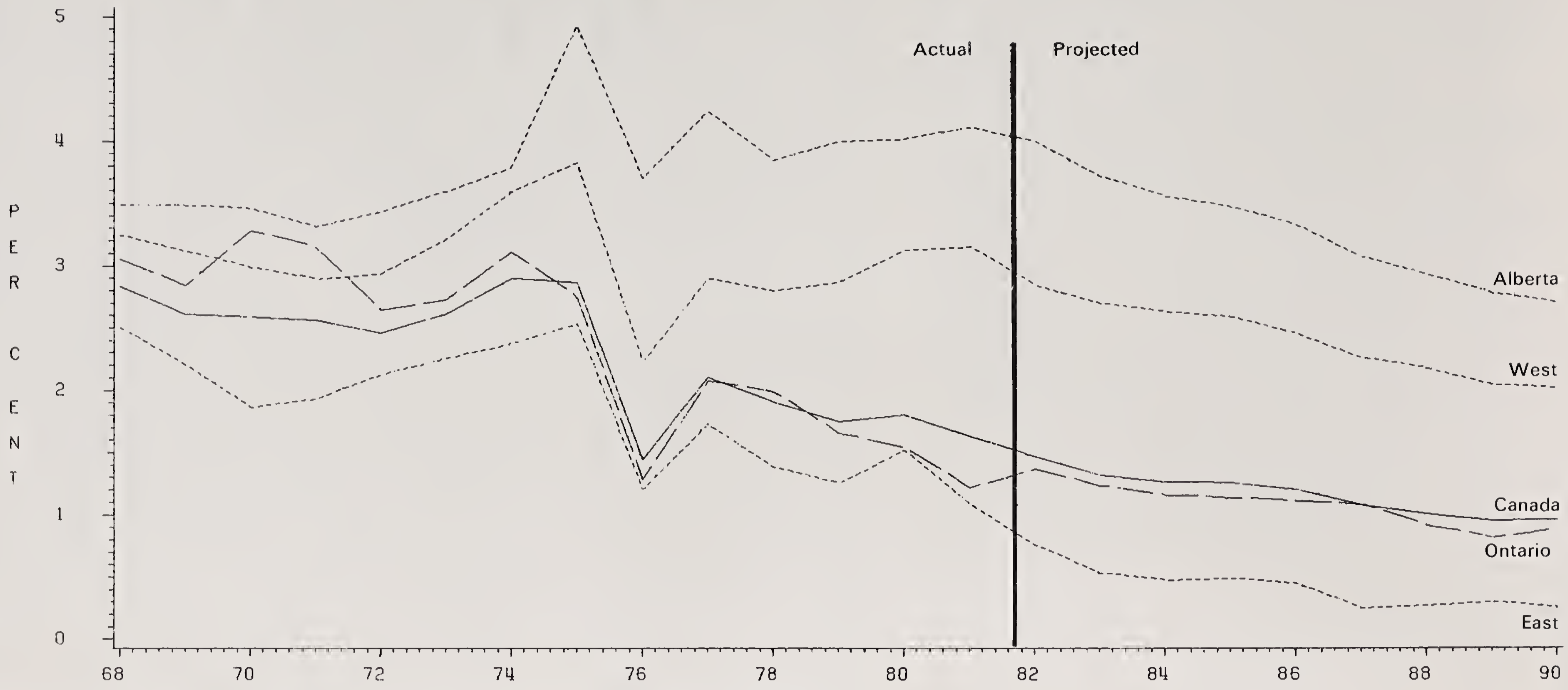
NOTE: 'East' comprises Newfoundland, Nova Scotia, Prince Edward Island, New Brunswick, and Quebec; 'West' comprises Saskatchewan, Alberta, and British Columbia.

offset slightly the effects of movements in source populations. In 1974-80, increased participation offset the effect of falling source-population growth and caused labour-force growth to rise slightly; moreover, the regional pattern in source-population growth was exaggerated by participation-rate movements. In this decade, however, the areas that are below the national average in population growth are also below the national average in labour-force growth, but to a lesser degree. The opposite holds for those areas above the national averages. This phenomenon occurs because during the 1980s, unemployment rates are generally falling (if slowly), bringing 'discouraged workers' (those who have stopped participating) back into the labour force. This pattern is more pronounced in the East and Ontario than in the West. In Alberta, participation rates in the early 1980s are already very high (just above 70 per cent in 1981), leaving relatively less room for further increases.

Assumptions about provincial labour productivity

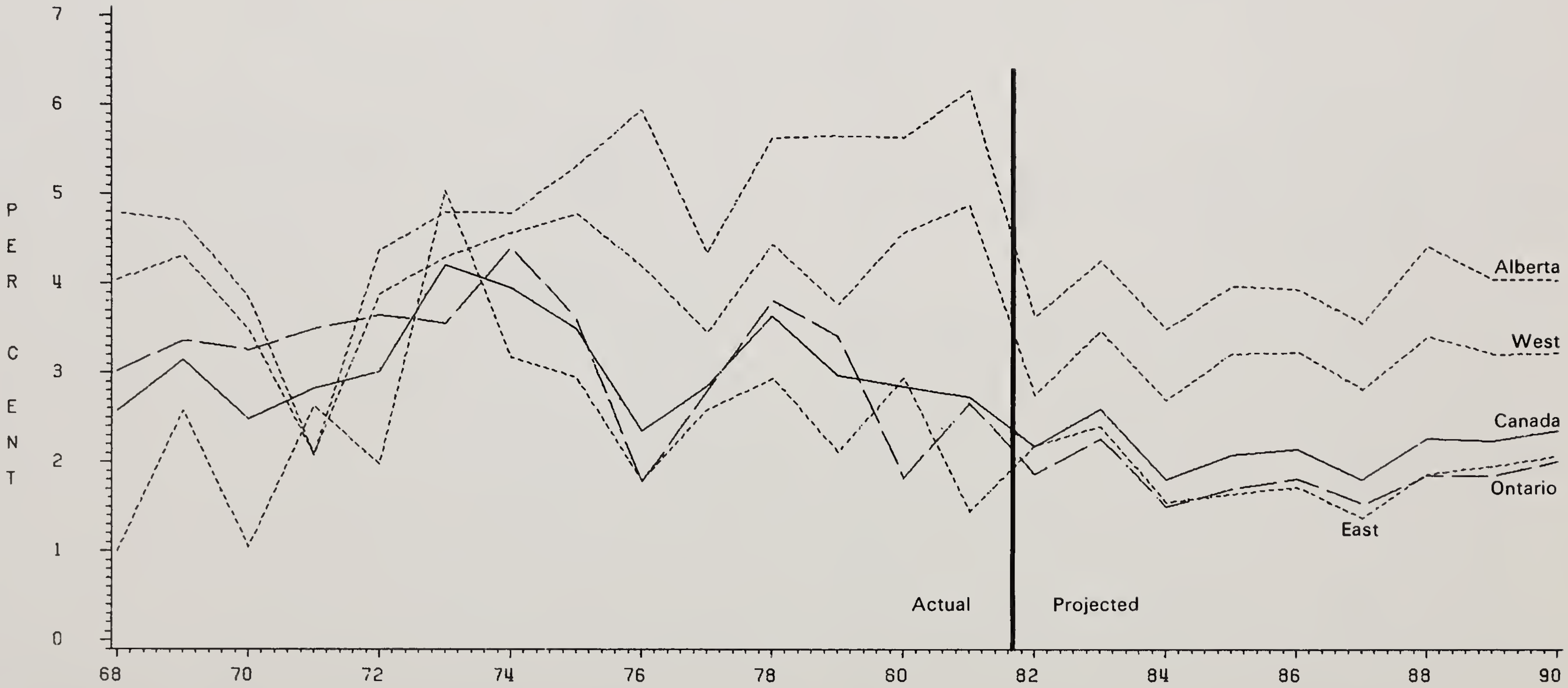
The second factor affecting the provincial projection is relative movements in labour productivity. Table 3.2 and Figures 3.3 and 3.4 present past and

Figure 3.1
Growth rates of labour-force source population by province/region



NOTE: 'East' comprises Newfoundland, Nova Scotia, Prince Edward Island, New Brunswick, and Quebec; 'West' comprises Saskatchewan, Alberta, and British Columbia.

Figure 3.2
Growth rates of labour force by province/region



NOTE: See note to Figure 3.1.

projected movements; year-by-year projections for Ontario are in the more detailed tables at the end of this chapter.[5]

Comparing 1974-80 to 1967-73 for labour productivity in aggregate and for the manufacturing and the goods-producing sectors, one can see that Ontario's position above the national average was considerably reduced in the later period, while the negative position of the East, especially Quebec, was much improved. In retrospect, the relative movements are not very surprising: a relatively low level of labour productivity can indicate a relatively high - and profitable - rate of capital productivity. (It may also indicate relatively great opportunities for increase through education and training.) Within limits, the natural equilibrating mechanisms of the market economy tend to equalize interregional differences of this sort, much as water seeks a common level. During the 1960s and 1970s, regional growth policies at the federal level may have helped the process - but this topic cannot be dealt with here.

Part of the explanation for the relative improvement of Alberta's already high position is the way in which the energy sector made the province a special growth-pole, attracting new energy-oriented industries. Note, however, that while Alberta's labour productivity rose in manufacturing between 1967-73 and 1974-80, it fell somewhat in the goods-producing sector as a whole. The explanation is that productivity fell heavily in the mineral fuels industry with the tapping of sources that were less readily accessible and required more labour per unit of production.

For the next decade, we assume a considerable levelling off of the previous movements of provincial productivity in all sectors combined. That is, Ontario's positive position declines only a little more, Quebec's negative position is reduced only slightly, and Alberta's positive position is also somewhat eroded. Partly, these results stem from our unwillingness simply to extrapolate the trends of the later 1970s. Much of the productivity difference between Ontario and Quebec has been erased, and it seems reasonable to reduce the rate at which the two will converge in the future. (And, as we have seen, it is convergence - not a crossover - that is to be expected.)

Partly, however, the results for aggregate provincial productivity stem from changes in the relative size of industries composing the aggregate. Table 3.2 and Figure 3.4 show that past trends are quite evident in manu-

[5] For a recent discussion of interprovincial productivity movements, focussing on total factor productivity, see Denny and Fuss (1983).

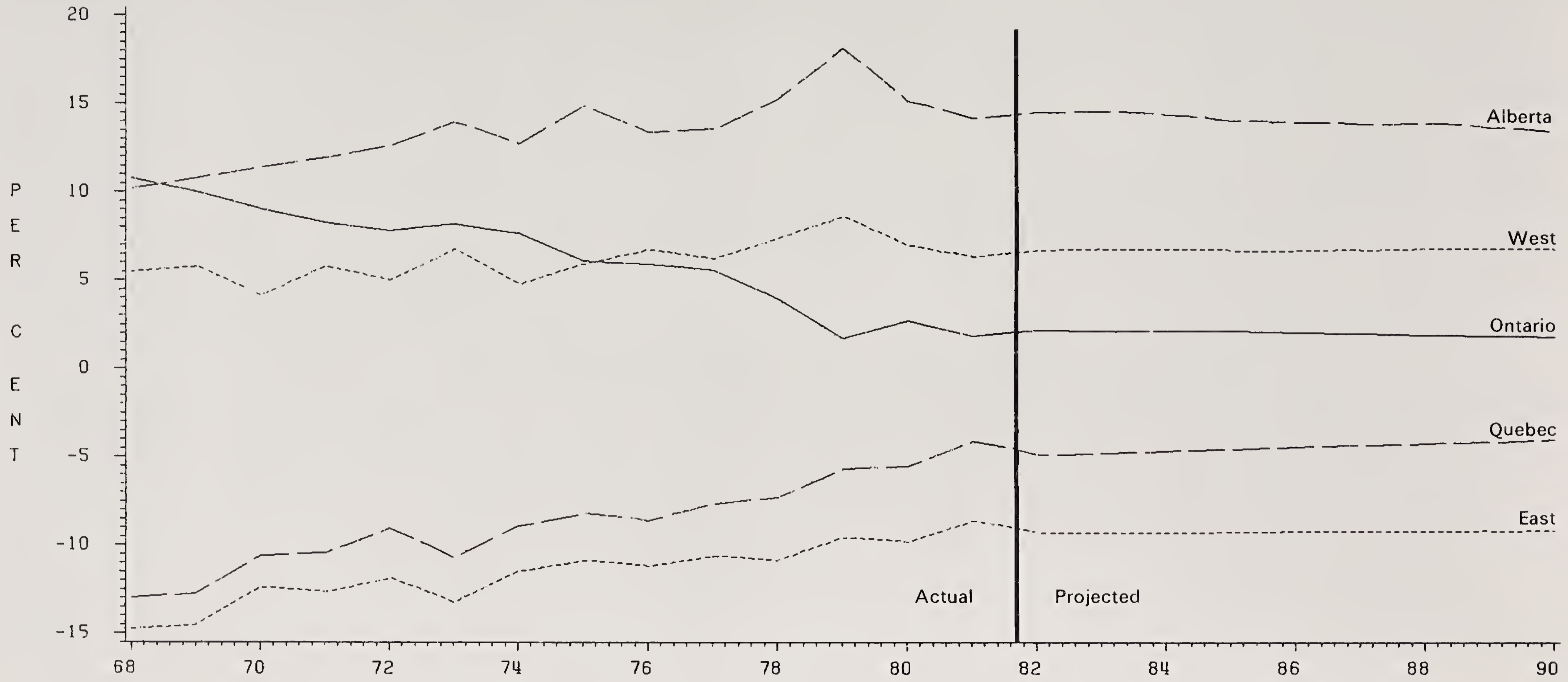
TABLE 3.2
Labour productivity by province/region
(percentage deviation from national average)

	Annual averages				
	1967-73	1974-80	1981-3	1984-6	1987-90
All sectors combined					
Ontario	9.3	4.8	2.0	2.1	1.9
East	-13.6	-10.6	-9.1	-9.3	-.2
Quebec	-11.4	-7.4	-4.6	-4.6	-4.2
West	5.7	6.6	6.6	6.7	6.8
Alberta	11.7	14.7	14.4	14.1	13.7
Manufacturing					
Ontario	10.8	7.0	4.5	3.8	2.9
East	-15.8	-11.5	-8.0	-7.6	-6.7
Quebec	-15.5	-10.7	-6.3	-5.7	-4.6
West	6.2	5.1	4.6	5.3	5.8
Alberta	12.1	15.4	16.1	17.8	19.4
Goods-producing industries					
Ontario	9.9	5.8	3.3	3.5	3.8
East	-13.6	-9.6	-6.7	-6.4	-5.6
Quebec	-12.3	-7.5	-3.1	-2.3	-0.7
West	5.0	4.8	4.3	3.2	1.7
Alberta	21.1	20.5	17.2	13.9	9.6

NOTE: See note to Table 3.1

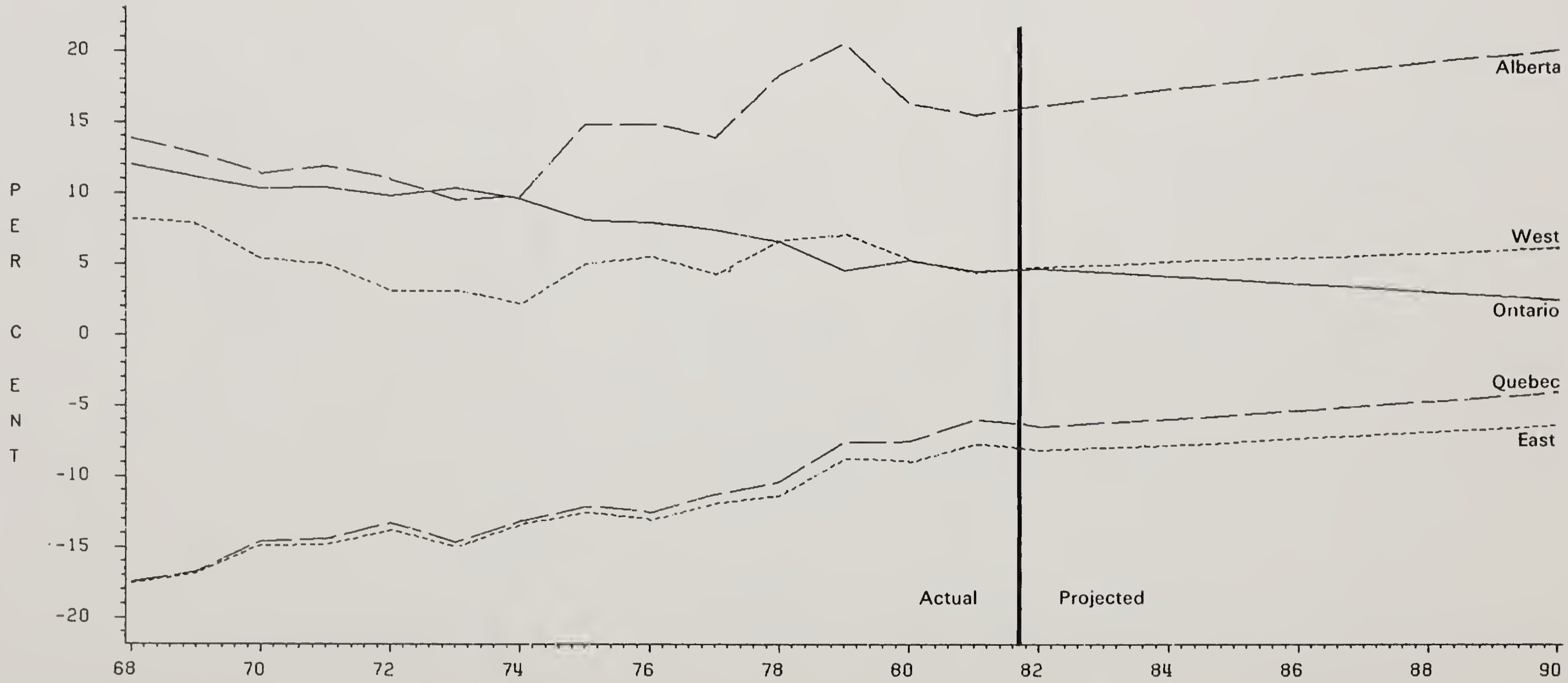
facturing; here the gap between Ontario and Quebec continues to close and that between Alberta and Canada as a whole to widen. The levelling off in the Alberta-Canada gap comes from the non manufacturing goods sectors. Specifically, Alberta increases its output shares of the construction and mining industries - both of which, as we saw in Chapter 2, are projected to have very low productivity growth. (Likewise, the relative decline of these sectors in Ontario and Quebec accounts for both provinces' relative improvements in productivity in the goods-producing aggregate.) Moreover, productivity growth in the mineral fuels sector is also low. Finally, the service sectors grow considerably in Alberta in the 1980s - and although their productivity is projected to be somewhat higher than national levels, their absolute values are still low and bring down the provincial average. (The increased importance of the service sectors also tends to slow the convergence of Ontario's and Quebec's aggregate labour productivities.)

Figure 3.3
Labour productivity by province/region
(percentage deviation from national average)



NOTE: See note to Figure 3.1.

Figure 3.4
Labour productivity in manufacturing by province/region
(percentage deviation from national average)



NOTE: See note to Figure 3.1.

Assumptions about provincial output shares by sector

Perhaps the most critical of our assumptions for Ontario concern future changes in its share of the output of various industries.[6] Provincial output shares depend upon a host of elements: labour availability and skills, wage rates, accessibility of markets, resource endowments, and major government initiatives and stimulative policies. The resources available for this study did not permit intense investigation of each of these factors, but the record of past changes in shares is available to be read, and certain major trends - such as further resource exploitation in the West - are beyond reasonable doubt. From these sources, we obtained the assumptions about share shifts that are incorporated in the projections. Like our other assumptions, they embody no surprises. And while they are conservative in assuming relatively little shift away from Ontario (especially westwards), this conservatism is required to yield consistency with the assumptions about population and productivity already discussed.

Our shares assumptions are summarized and compared with history in Table 3.3 and Figures 3.5 to 3.9; details are in Table 3.12 at the end of the chapter.[7]

Examining the aggregates first (see especially Figure 3.9), it is clear that given Ontario's already large scale, its share of the Canadian economy has changed relatively little since the late 1960s; on average, the province accounted for about 42 per cent of Canadian output in 1967-73 and about 40 per cent in 1974-80. A further gradual decline is projected, to an output share averaging 38.4 per cent over the 1980s and ending the decade at 37.8 per cent. The principal source of the decline is in the goods-producing industries - not so much in manufacturing, although that does decline slightly, but in mining and construction (see Figures 3.5 and 3.7). The decline in construction is especially prominent and is, of course, the result of major project development in the West. Remember, however, that a decline in Ontario's share of construction does not necessarily entail a similar decline in

---

[6] While the PRISM model projects Ontario's share of the tertiary sectors (largely services), explicit external assumptions must be made about its share of primary goods-producing sectors and of manufacturing.

[7] Note that the tables and figures include results for certain aggregate shares - for example, the Ontario share of manufacturing - which are not, strictly speaking, assumed, since they depend on the changing mix of sectors projected at the national level.

TABLE 3.3
Ontario's output shares by industry: summary

	Annual average		
	1967-73	1974-80	1981-90
Agriculture, fishing, & trapping	0.251	0.240	0.222
Forestry	0.162	0.149	0.146
Mineral-fuel mines & wells	0.003	0.002	0.002
Other mines & quarries	0.309	0.241	0.154
Food, feed, beverages, & tobacco	0.447	0.442	0.423
Textiles & clothing	0.350	0.366	0.394
Wood & furniture	0.267	0.252	0.206
Paper, printing, & allied industries	0.421	0.385	0.383
Primary metal & metal fabricating	0.612	0.594	0.571
Motor vehicles & parts	0.909	0.896	0.871
Machinery & other transportation equipment	0.609	0.573	0.562
Electrical products	0.658	0.679	0.675
Chemical, rubber, & petroleum products	0.579	0.564	0.550
Nonmetallic mineral products	0.510	0.476	0.426
Other manufacturing industries	0.642	0.654	0.653
Total manufacturing	0.543	0.532	0.514
Construction	0.355	0.300	0.244
Electric power, water, & gas utilities	0.366	0.341	0.329
Total goods-producing industries	0.438	0.418	0.387
Transportation & storage	0.333	0.325	0.321
Communication	0.403	0.404	0.401
Trade	0.401	0.383	0.366
Finance, insurance, & real estate	0.443	0.438	0.427
Other service industries	0.409	0.409	0.400
Total service industries	0.405	0.399	0.391
Government sector	0.403	0.383	0.359
Total: all sectors	0.418	0.403	0.384

construction activity since the sector's relative size in the economy as a whole is projected to increase under the investment-led growth of the 1980s. In fact, in terms of output, Ontario's construction sector is projected to grow somewhat over the 1980s.

Within manufacturing, the largest projected decline is in the province's share of the nonmetallic minerals sector, which is a chief supplier to construction and whose products are, in many cases, not easily transported over long distances. Most of the other major manufacturing sectors are projected

Figure 3.5
Ontario's shares of primary industries

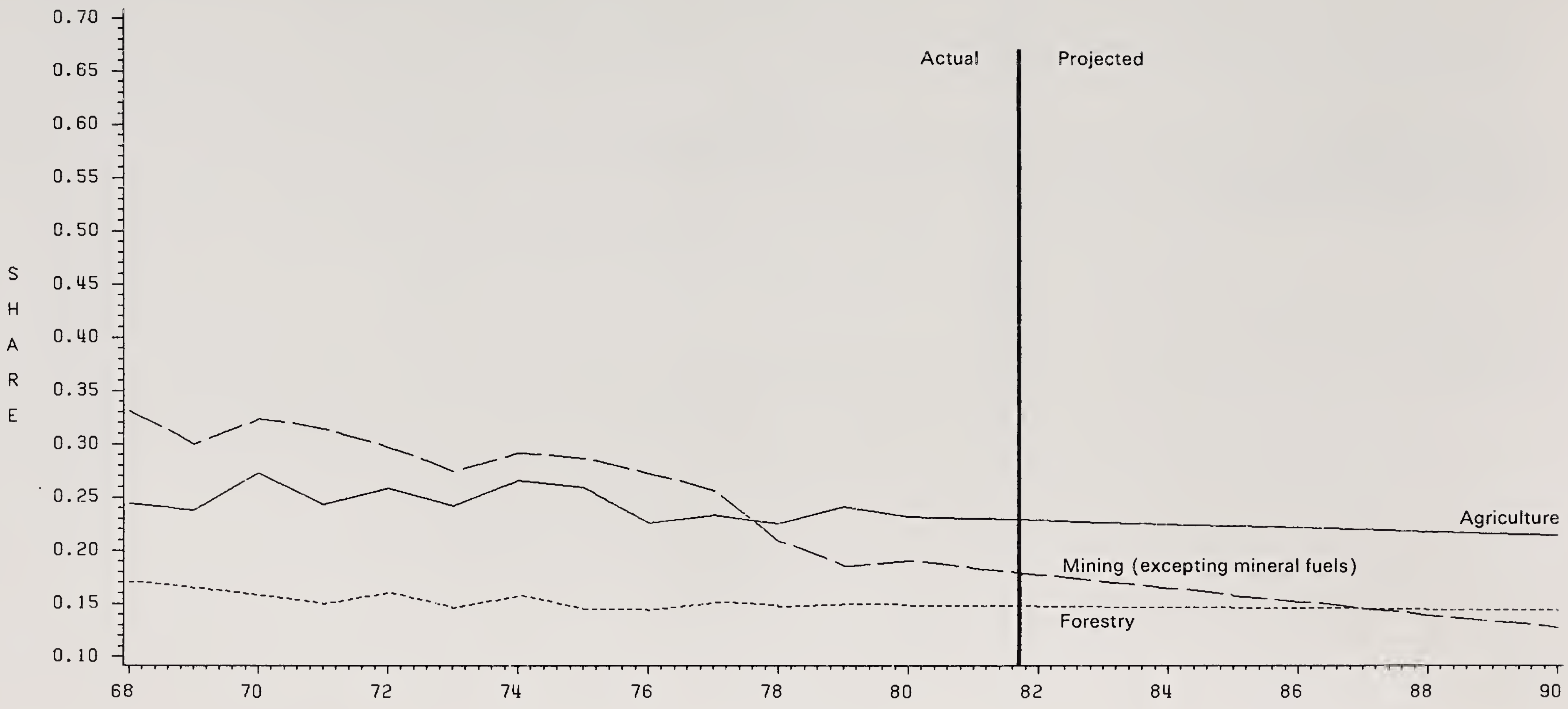


Figure 3.6
Ontario's share of manufacturing industries

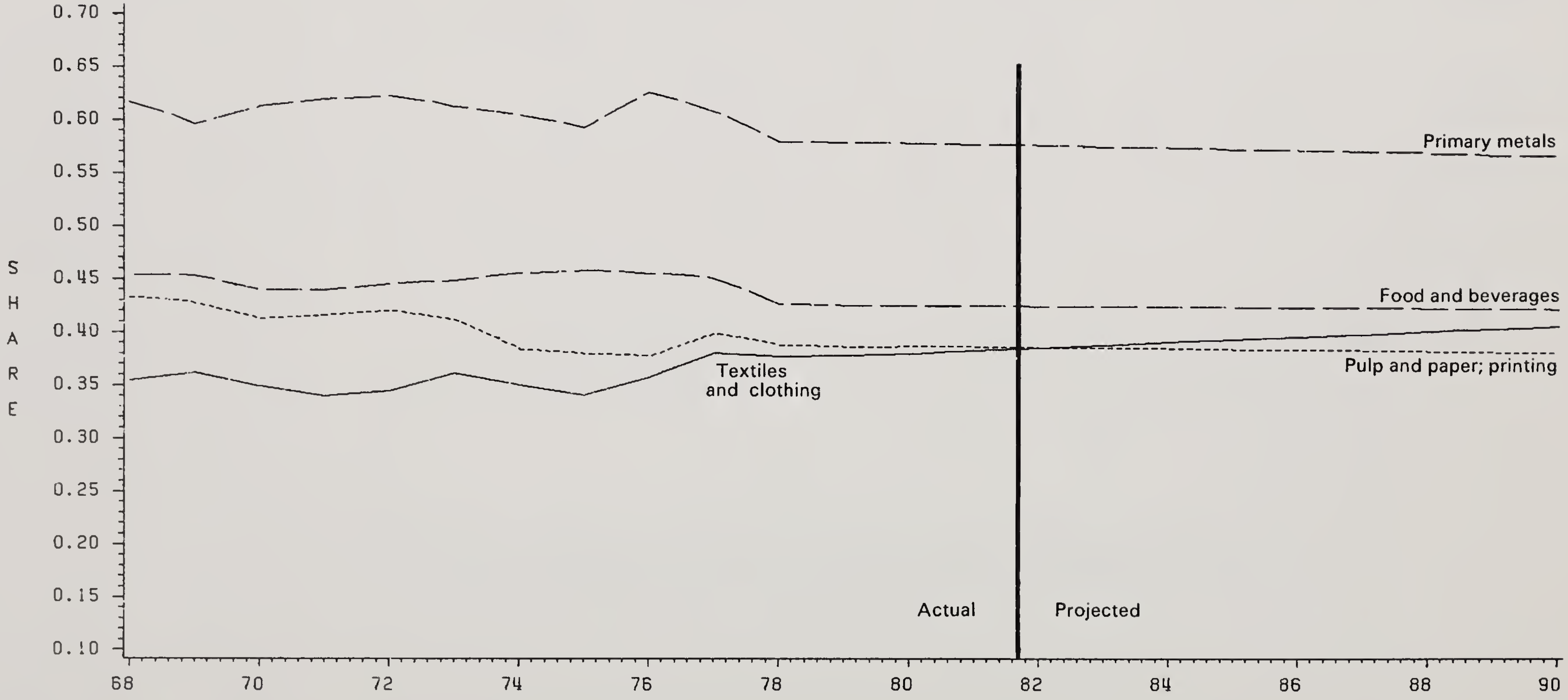


Figure 3.6 continued

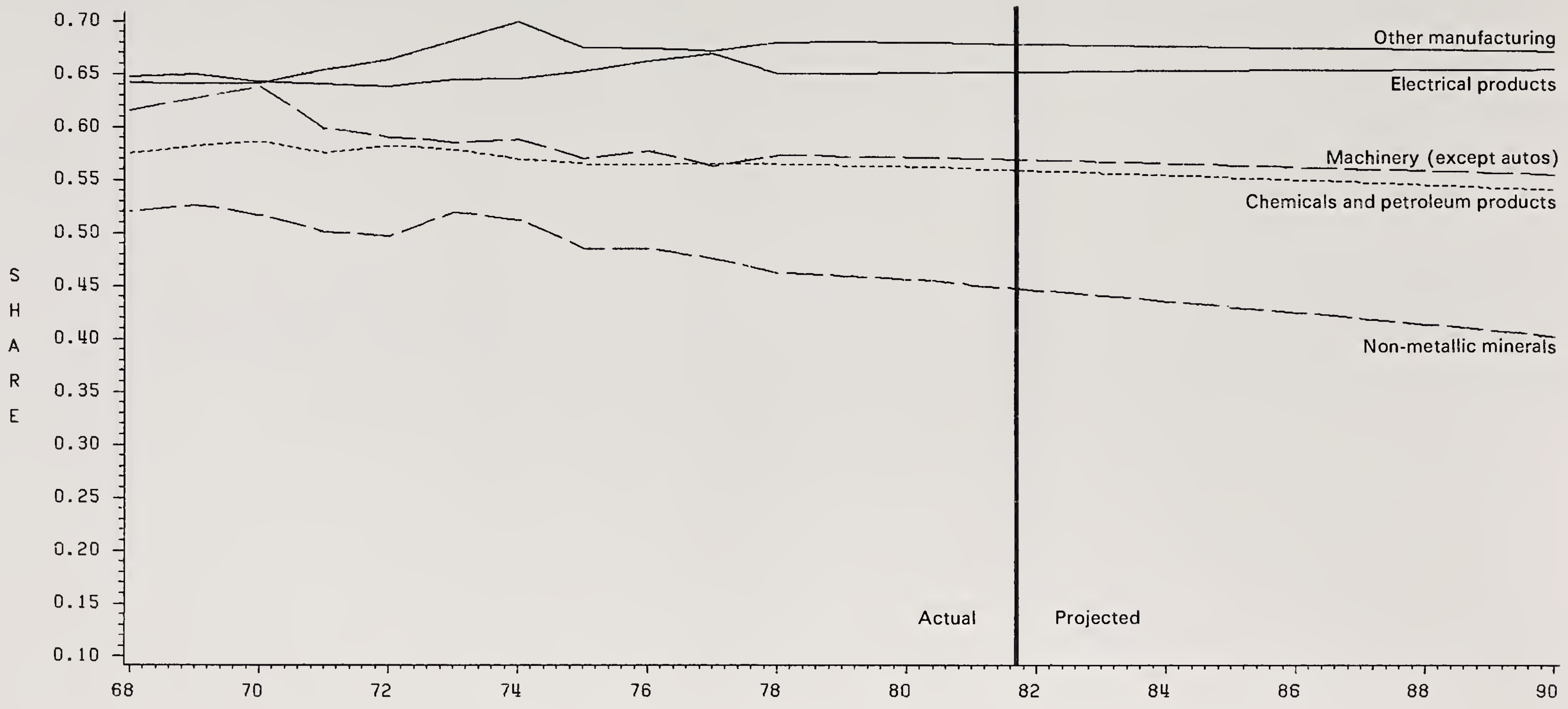


Figure 3.7
Ontario's shares of construction and utilities

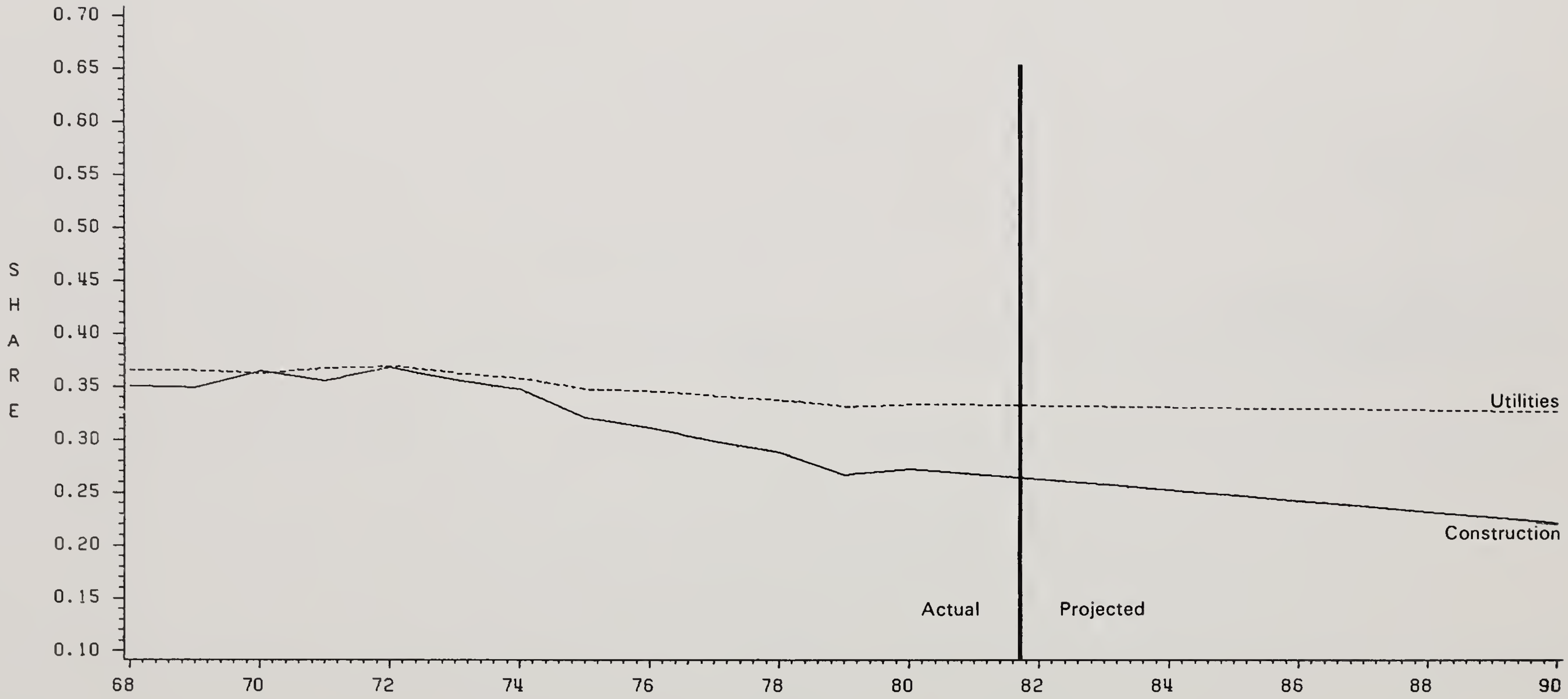


Figure 3.8
Ontario's shares of selected services

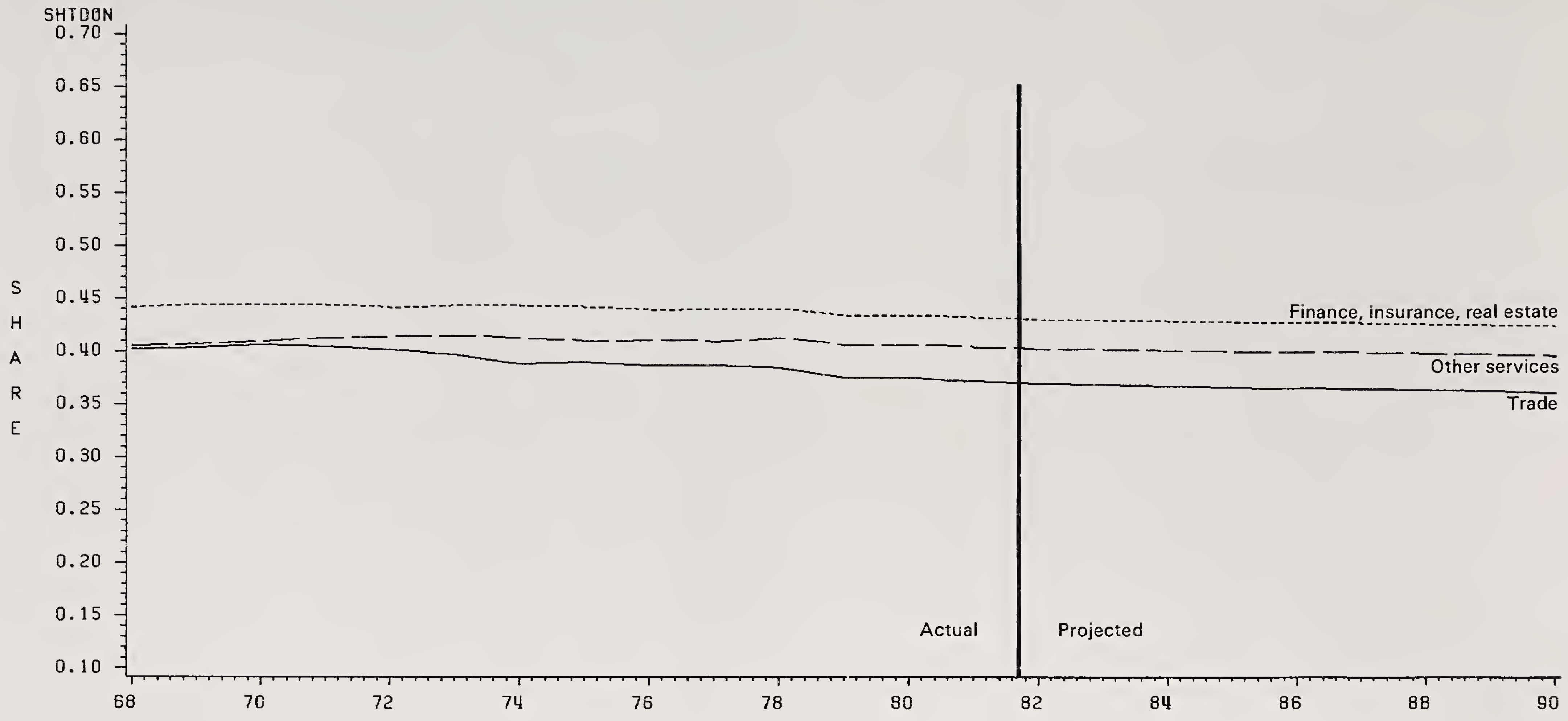
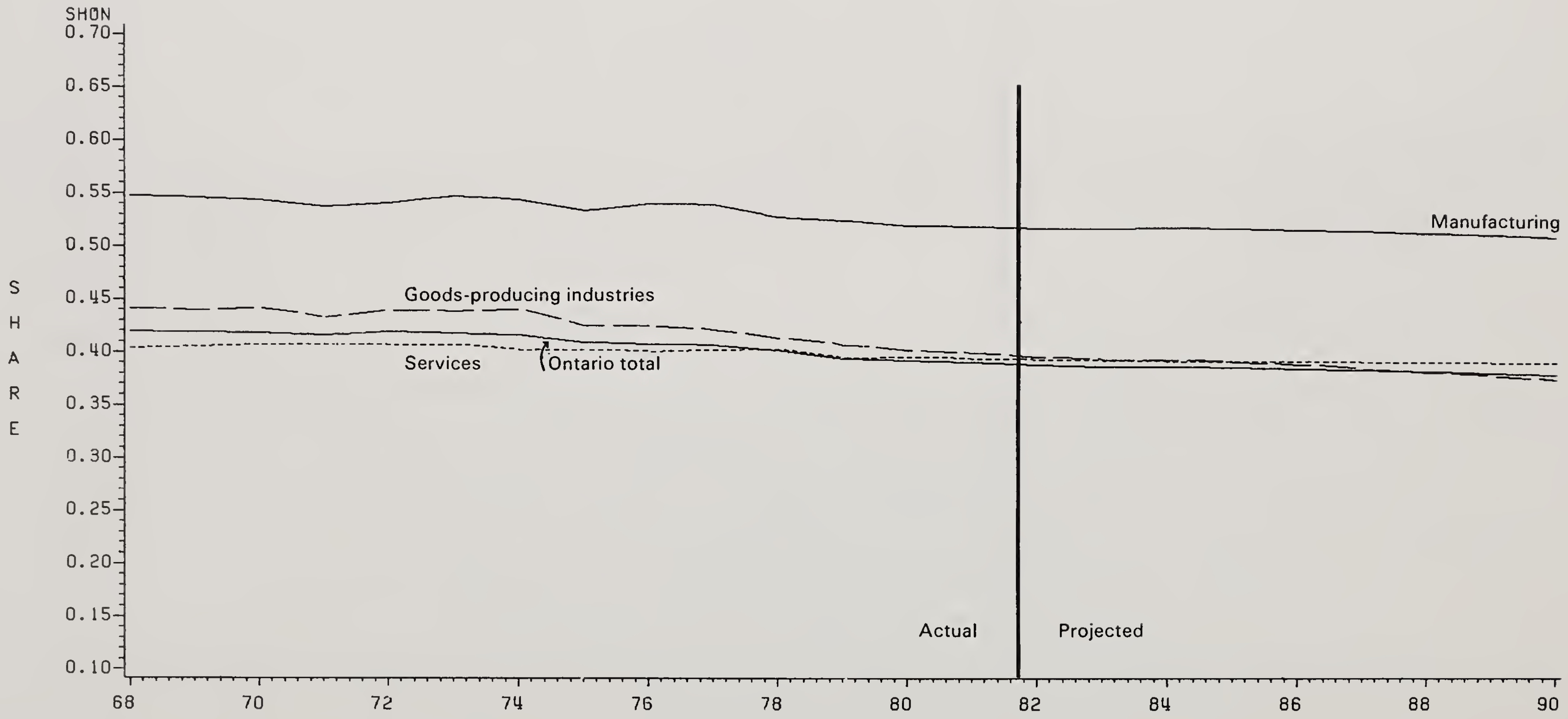


Figure 3.9
Ontario's shares of industrial aggregates



to see only slight declines; and a small increase in textiles and clothing is suggested very tentatively, on the basis of past trends. One reason the changes in Ontario shares appear so small for such sectors as metals, machinery, and electrical products is that the shares are very large to begin with. In contrast, the high-growth western provinces' shares of some of these industries in 1980 are so low that a relatively large increase (of say, 50 per cent) entails a relatively small change in Ontario's share.

Within services, the movements in shares are small; the largest relative decrease during the 1970s was in wholesale and retail trade, and this trend is projected to continue. Note also the fall in Ontario's share of government (see Table 3.3). The combination of projected federal and provincial restraints in Ontario with the West's relatively robust revenue sources and its need to provide for a relatively faster-growing population suggests that a decline of this extent is not unreasonable.

THE ONTARIO PROJECTION: RESULTS

Given the national projection described in Chapter 2 and the additional assumptions just outlined, there are few surprises in the Ontario results, which are summarized in Tables 3.4 and Figure 3.10. More detailed, year-by-year summaries are presented in Tables 3.15 and 3.14 at the end of the chapter.

Since the results for Ontario do not differ drastically from those for Canada as a whole and since the national results were described in Chapter 2, much of the following discussion simply compares Ontario to the country as a whole or to other provinces. Tables 3.4 and 3.14, therefore, show the Ontario results as a proportion of or ratio to the national results.

In brief, the Ontario economy is projected to grow during the 1980s at a rate somewhat below the national average - not so much because Ontario is doing poorly but because the West is doing well, pulling up the national average. A combination of excellent resource endowments and unexploited opportunities whose time has come makes the latter the Canadian growth pole for the decade. Nevertheless, the Ontario economy undergoes only a small change in its relative position in Canada. Natural constraints on migration within the country plus Ontario's and the East's advantages of capital-in-place, transport systems, and proximity to markets make unlikely any larger shift in the centre of economic activity than is projected here.

TABLE 3.4
The Ontario economy: summary

	Annual average				
	1967-73	1974-80	1981-3	1984-6	1987-90
Growth rate					
Real provincial product at factor cost	5.3	2.0	1.9	3.5	3.1
Deflator, provincial GDP	5.1	9.9	8.8	8.7	7.7
Employment	3.2	2.7	2.0	2.3	2.1
Real personal disposable income per capita	4.0	2.0	-0.0	0.4	1.4
Unemployment rate	4.2	6.4	7.4	6.1	4.9
As a percentage of national average					
Real provincial product	0.418	0.403	0.388	0.385	0.381
Nominal provincial product	0.416	0.388	0.369	0.364	0.360
Productivity (GDP/employee)	1.09	1.05	1.02	1.02	1.02
Employment	0.382	0.385	0.380	0.377	0.374
Real personal disposable income per capita	1.15	1.09	1.07	1.05	1.02

Especially during the first half of the 1980s, the terms of trade continue to shift adversely for Ontario - that is, the prices of Ontario's products are not projected to rise as fast as those of certain of the West's products, especially energy products. Thus, Ontario's income share declines somewhat more than its share of real output. Ontarians' real disposable income, for example, is projected to continue to move closer to the national average, although it remains somewhat above it at the end of the decade. Provincial productivity also moves closer to the national average, as already noted, and the Ontario unemployment rate falls gradually with the national rate.

Real growth

Tables 3.5 and 3.6 and Figures 3.11 through 3.13 give a closer look at Ontario's real growth, contrasting it with the history of and projections for growth in all Canada and in other regions.[8] (Table 3.15 at the end of the

[8] This study concentrates most closely on the Ontario economy. The results presented for other individual provinces should, therefore, be considered less precise.

Figure 3.10
The Ontario economy: summary

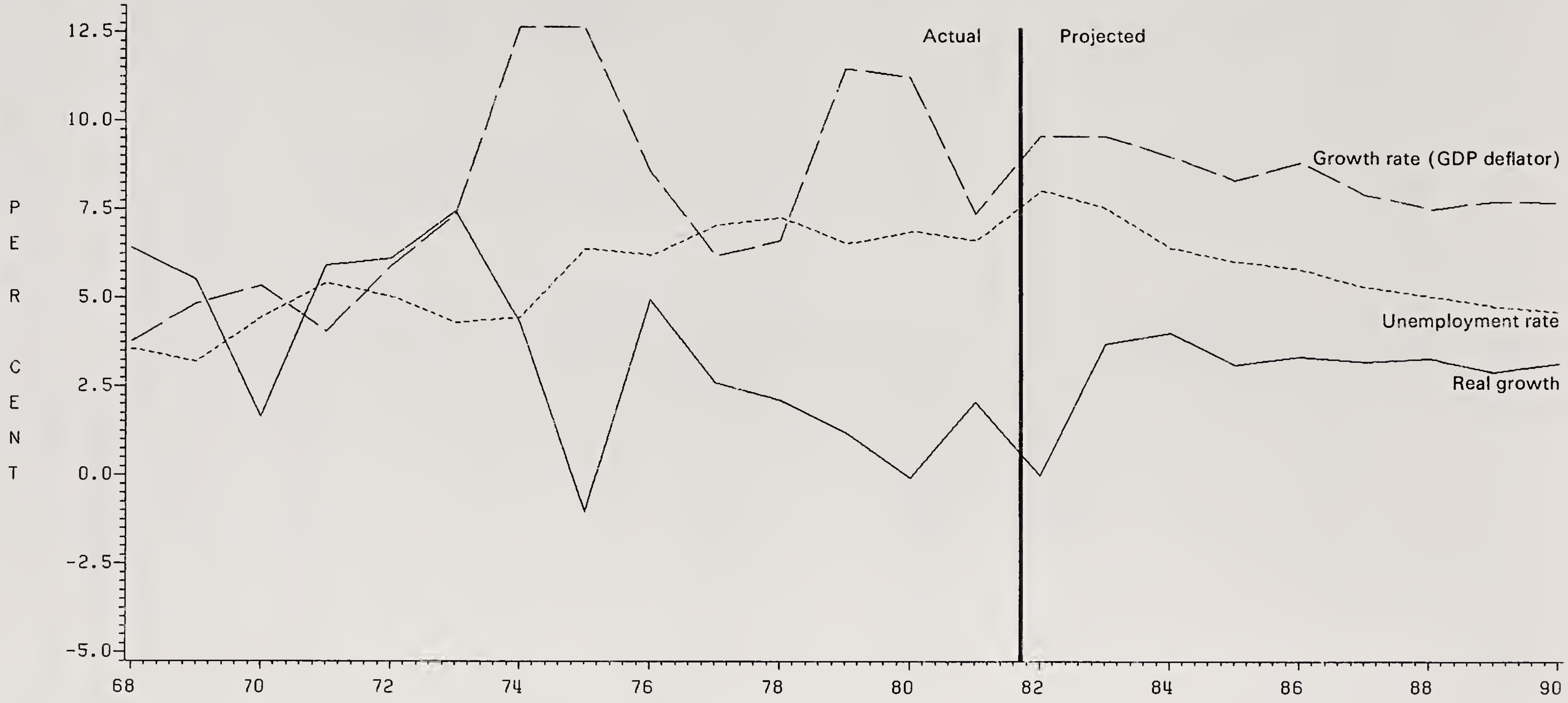


TABLE 3.5
Real growth rate by province/region (real GDP at factor cost)

	Annual averages				
	1967-73	1974-80	1981-3	1984-6	1987-90
Ontario	5.3	2.0	1.9	3.5	3.1
Canada	5.2	2.9	2.4	3.7	3.5
East	4.8	2.8	2.1	3.4	3.2
Quebec	4.9	2.9	2.1	3.4	3.2
West	5.6	4.4	3.6	4.5	4.4
Alberta	6.7	5.8	4.4	5.0	5.1

NOTE: See note to Table 3.1.

TABLE 3.6
Shares of real and nominal output by province/region

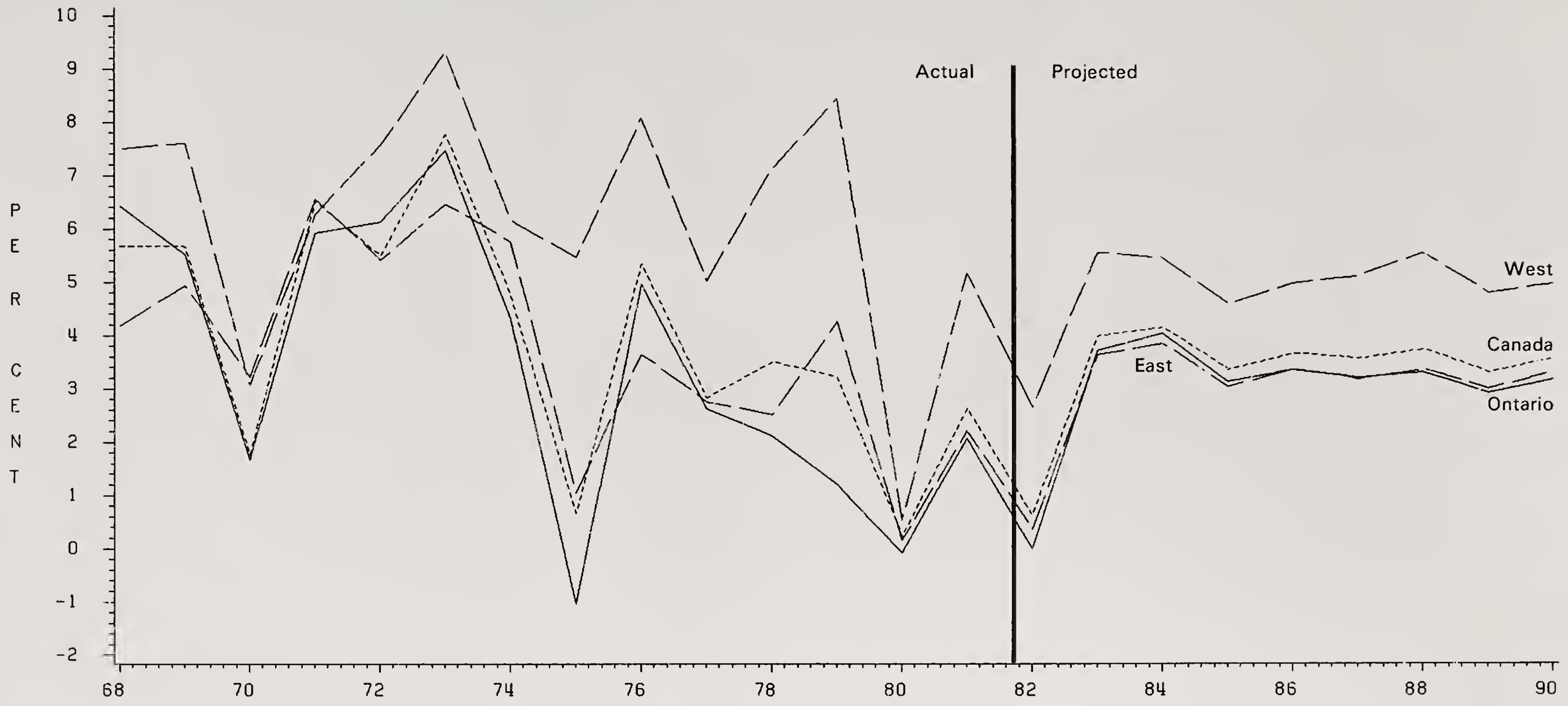
	Annual averages				
	1967-73	1974-80	1981-3	1984-6	1987-90
Real GDP					
Ontario	0.42	0.40	0.39	0.39	0.38
East	0.30	0.30	0.29	0.29	0.29
Quebec	0.24	0.24	0.23	0.23	0.23
West	0.24	0.25	0.27	0.28	0.29
Alberta	0.09	0.10	0.12	0.12	0.13
Nominal GDP					
Ontario	0.42	0.39	0.37	0.36	0.36
East	0.31	0.29	0.28	0.27	0.27
Quebec	0.25	0.23	0.22	0.22	0.22
West	0.23	0.27	0.31	0.32	0.33
Alberta	0.08	0.12	0.15	0.16	0.16

NOTE: See note to Table 3.1.

chapter gives year-by-year detail.) Clearly, growth in the West leads, with Alberta in the vanguard, although the gap between the growth rates of Alberta and the other two western provinces is projected to narrow from that of the later 1960s and 1970s.

Looking in the opposite direction, the 1980s' growth in the East is projected to be slightly above that in Ontario, except in the mid-1980s when

Figure 3.11
Real growth rates by region



NOTE: See note to Figure 3.1.

Figure 3.12
Real growth rate by province

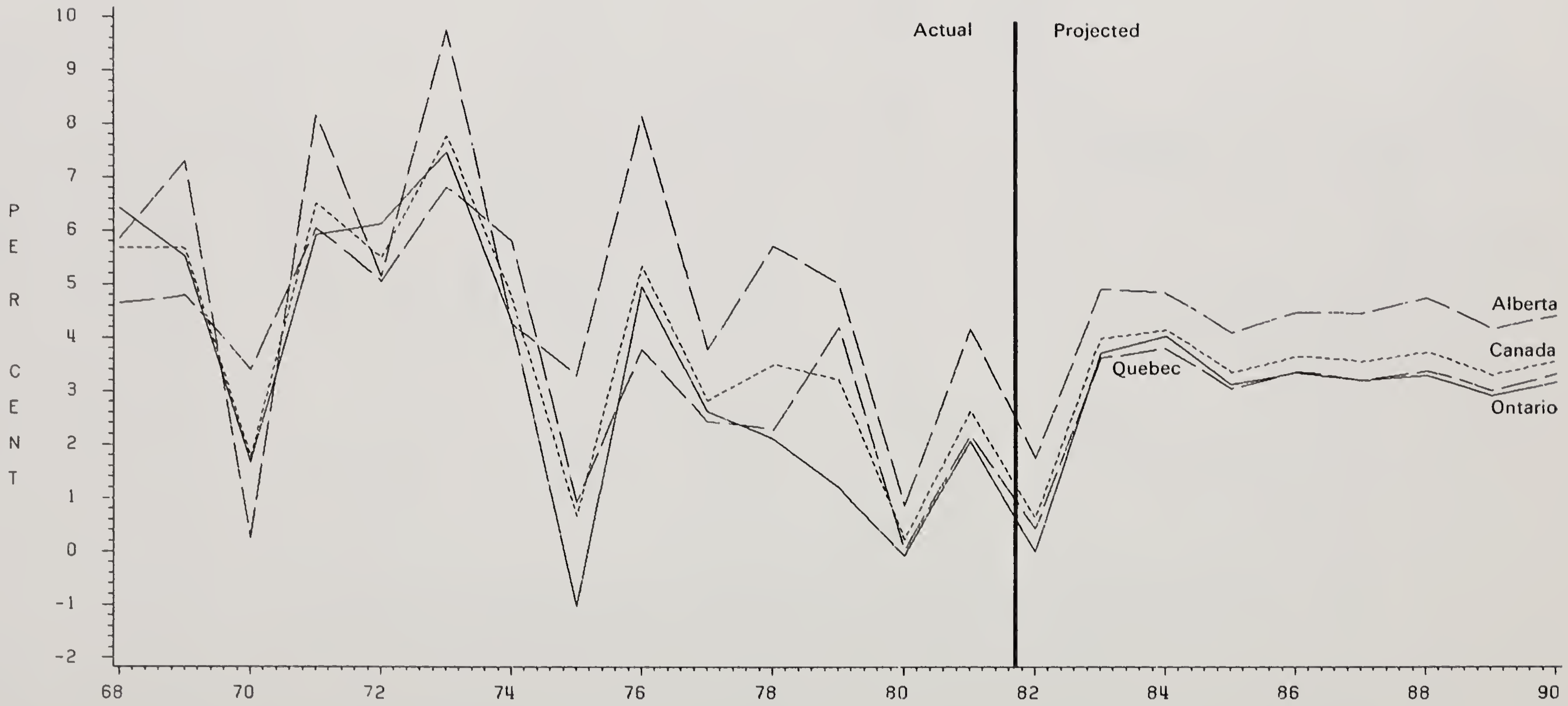
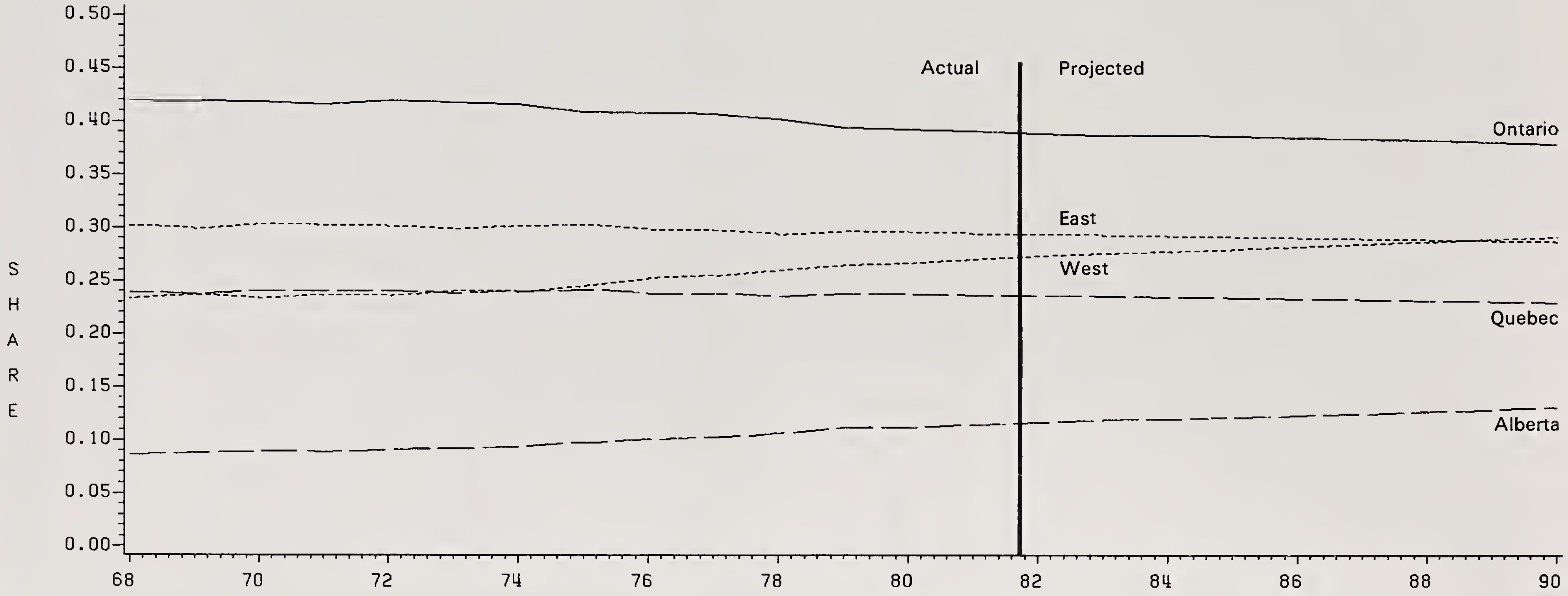


Figure 3.13
Shares of real output by province/region



NOTE: See note to Figure 3.1.

investment growth is very high. The difference between Ontario's and the East's growth rates is, however, much smaller than it was during the 1974-80 period, when the Ontario economy was more sensitive to cyclical downturns and the economies of the East were partly boosted by their own megaprojects - especially the James Bay hydro development.

The net result of lower growth in Ontario and the East is the reduction of their real output shares, while those of the West rise. By 1987-90, the share of the three western provinces becomes equal to that of the five easternmost, although the Ontario share remains larger than either.

These projected shifts are certainly not drastic; in fact, they are less than those of some gloomy forecasts. Is such 'conservatism' reasonable? As already discussed, the chief constraint on more rapid shifts of real output shares seems to be the rates of internal migration. Yet the projections used here assume rather a high level of westward migration, and the real output shifts that occur are enough to leave unemployment rates quite low in the western provinces by the end of the decade.[9] It is possible that greater relative productivity improvements in the West would allow more output to be shifted there without creating an excessive demand for labour, but the assumptions include some productivity swing westwards in many industries, and the same equilibrating factors that have operated to narrow the productivity gap in eastern Canada will be at work preventing the opening of a major productivity gap between East and West. So, a much greater shift westwards of real output shares appears unlikely during the 1980s.

Table 3.7 illustrates this point with selected figures for Ontario and Alberta. Between 1980 and 1990, the latter's source population for the labour force is projected to grow at almost 3.4 per cent per year - three times the rate for Ontario - with in-migrants accounting for at least two-thirds of the increase. The Alberta unemployment rate is already low at 3.7 per cent in 1980; it is projected to fall to 3.3 per cent by 1990. If it fell to 3.0 per cent or less, indicating a large excess demand for labour, then new firms might be discouraged from settling in the province. So despite the projections of a relatively large rate of population growth and a very low unemployment rate,

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[9] Recall that, as discussed in Chapter 2, the 'full-employment' unemployment rate must be considerably above zero since some individuals are always in the process of job search and others inevitably have skills that are mismatched with the available jobs. Measured unemployment rates below 3 or 3.5 per cent actually indicate considerable labour shortages.

TABLE 3.7
Output and population: Ontario and Alberta

Ontario		Alberta
	1980	
0.391	Real GDP share	0.111
6.9	Unemployment rate	3.7
0.363	Source population share	0.085
	1981-90	
1.09	Average annual growth in labour force source population	3.36
	1990	
0.378	Real GDP share	0.130
4.6	Unemployment rate	3.3
0.359	Source population share	0.104

Alberta's real output share only increases by about 2 percentage points.

Nominal output growth

In looking at a national economy, researchers now pay little attention to growth in nominal (current-dollar) GNP. Interest focusses instead on real-GNP growth, as a measure of the increase of output, and on the rate of change of the GNP deflator, as an indicator of inflation. But between provinces - and indeed between countries - rates of nominal output growth are more important since it is nominal output (the amount of output times its price) that is available to be translated into income. Of course, a higher level of nominal output is not necessarily translated into higher income, especially higher personal income; the translation depends on the government's spending and taxation policies and on how the private sector distributes profits. A notable example of the distinction between real and nominal output is found in the members of the Organization of Petroleum Exporting Countries. During the past ten years, many OPEC nations have not greatly increased their real output - as measured in, say, barrels of oil or their 1971-dollar equivalents. Yet because of the relative increase in the price of petroleum, the nominal output and incomes of these nations have increased several fold.

The same phenomenon has occurred in Canada on a much smaller scale and is projected to continue, especially during the first half of the decade as the country moves closer to world oil prices. Put otherwise, the terms of trade - the price of what is produced relative to what is bought - are shifting in favour of the West, especially Alberta.

As shown in Figure 3.14 (see also Tables 3.4 and 3.6 and Figure 3.15), Ontario's shares of real and nominal output were almost equal in the 1967-73 period. Thereafter, its nominal share fell faster than its real share, a phenomenon found also in the East. This movement continues in the 1980s, although at a reduced rate. By the last years of the decade, the nominal output share of the West is almost equal to that of Ontario and well above that of the East - a considerable contrast with the pattern of real output shares at the end of the decade.

Note from Tables 3.4 and 3.15 that Ontario's GDP deflator is well below that of Canada as a whole during the early 1980s. This is not an indication of Ontarians' enjoying relatively lower inflation in consumer-goods prices;[10] it is simply a reflection of the shifting terms of trade. The prices of those goods in which Ontario specializes (for example, automobiles, transportation machinery, and steel) are projected to grow more slowly than the prices of goods produced elsewhere - most notably oil, gas and coal.

Employment and unemployment

As we saw in Chapter 2, the Canadian unemployment rate is projected to fall during the decade, partly because the early 1980s high degree of slack is gradually reduced and partly because the 'full-employment' unemployment rate is itself projected to decline so that lower measured unemployment rates indicate the same degree of slack (for reducing inflation). Table 3.8 and Figure 3.16 give a closer look at the employment and unemployment projection for Ontario, plus national and regional comparisons. Tables 3.16 and 3.17 at the end of the chapter provide detailed breakdowns. In the late 1970s and early 1980s, the degree of labour-market slack was relatively high in the East and in Ontario, so it is not surprising that unemployment rates are projected to fall more there than in the West, especially in Alberta. Between the

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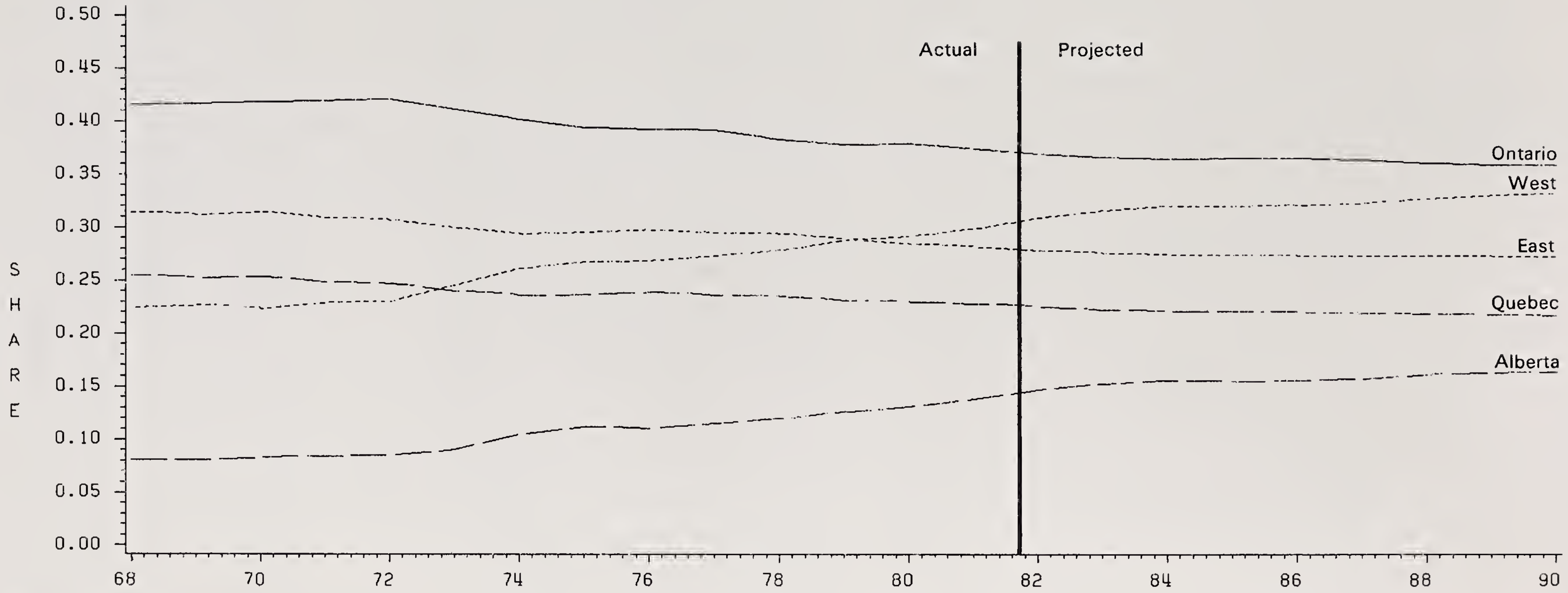
[10] Indeed, Canada has relatively little regional variation in consumer-price inflation in the long run, and we have made no attempt to project it; for all provinces, real disposable income has been deflated by the national consumer price index.

Figure 3.14
Shares of nominal output by province/region



NOTE: See note to Figure 3.1.

Figure 3.15
Shares of nominal and real output, Ontario and Alberta

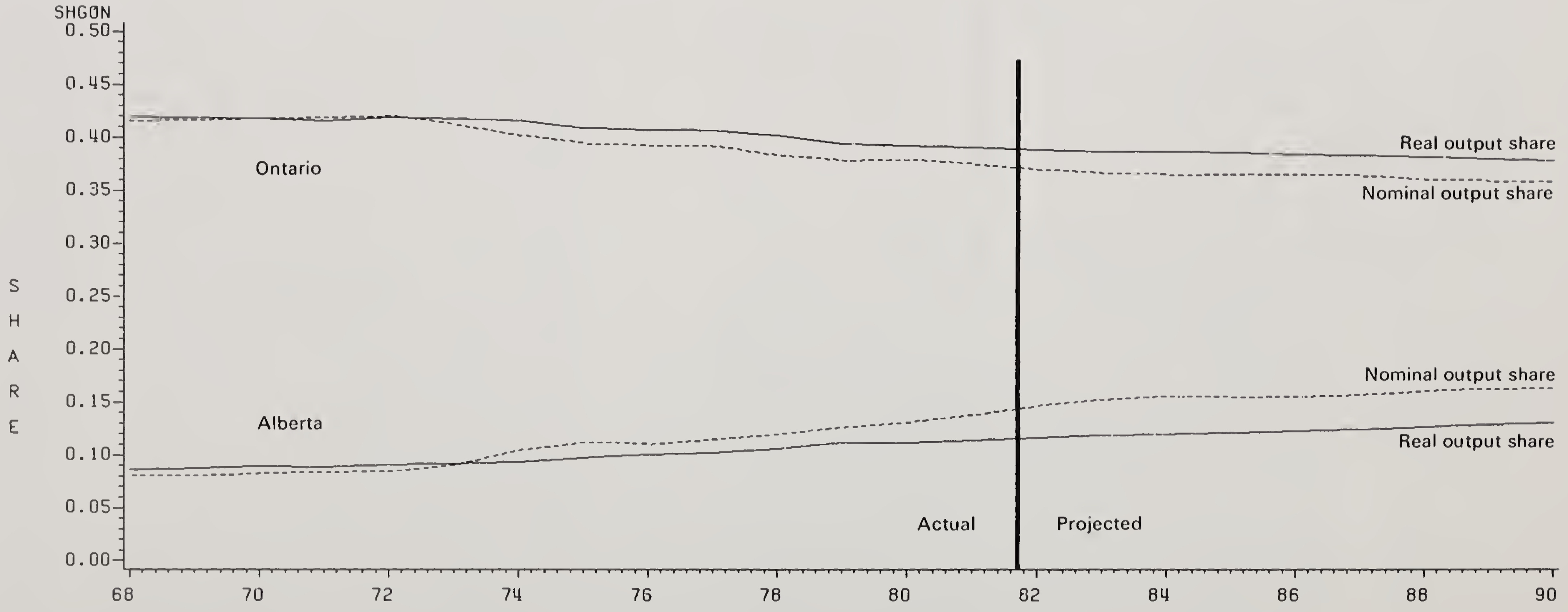


TABLE 3.8
The unemployment rate by province/region

	Annual average				
	1967-73	1974-80	1981-3	1984-6	1987-90
Ontario	4.2	6.4	7.4	6.1	4.9
Canada	5.2	7.3	8.0	6.9	6.0
East	6.4	9.6	10.8	9.7	8.6
Quebec	6.4	9.1	10.5	9.1	7.9
West	5.2	5.8	5.6	4.9	4.5
Alberta	4.4	4.0	4.1	3.5	3.4

NOTE: See note to Table 3.1.

1981-83 and 1987-90 periods (see Table 3.8), they fall by about 2.5 percentage points in Ontario and Quebec, but by less than 1 percentage point in Alberta.

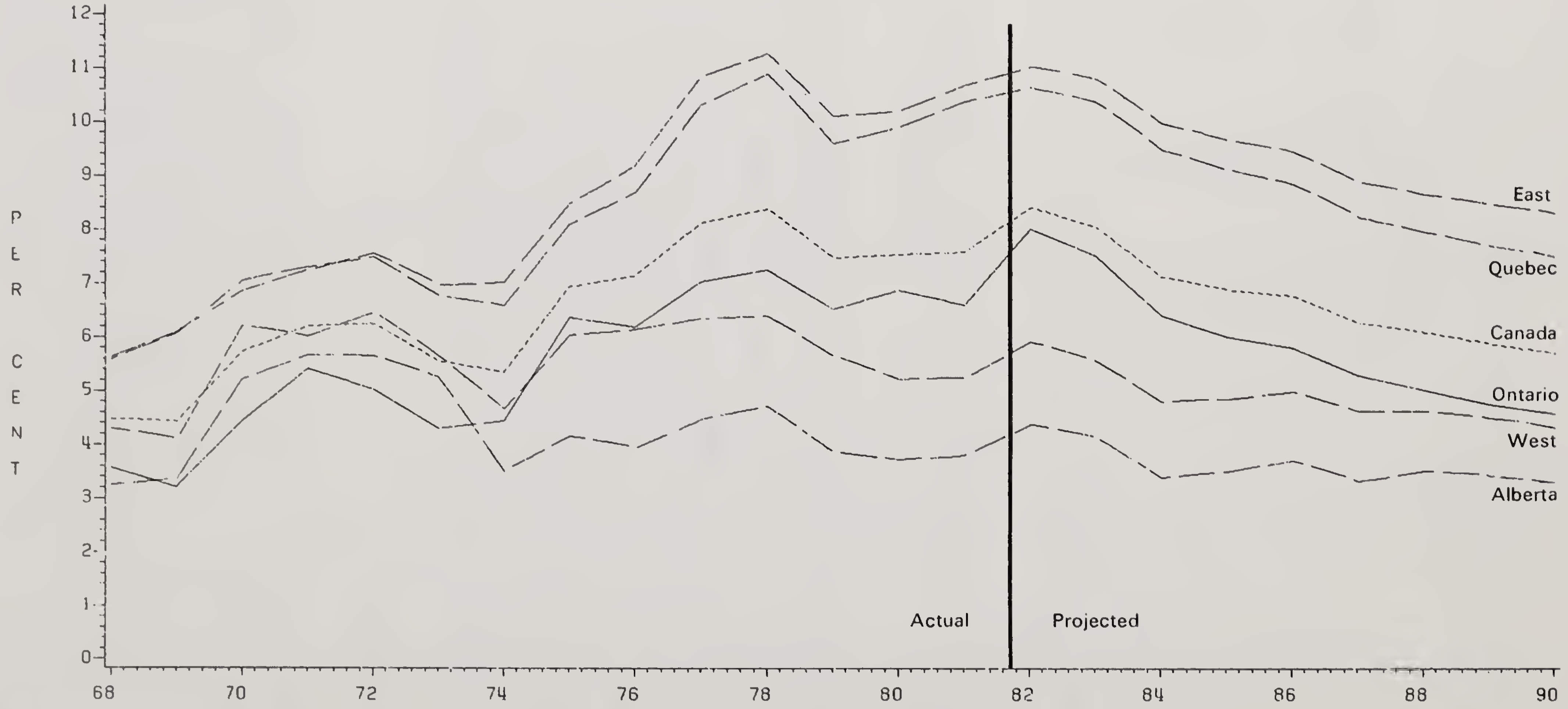
Interestingly, the fall in Ontario is projected to result more from employment growth and less from reduced labour-force growth than it is in Quebec. In the latter province, the baby boom ended earlier than in the rest of Canada, so during the 1980s, the growth rate of its source population is well below the national rate, helping to move its unemployment rate downwards. Employment growth in Ontario is based on a recovery from the 1981-2 recession and, to some extent, on a further narrowing of the productivity differential between Ontario and Canada as a whole. (Lower productivity growth in Ontario at least has the advantage that a given increase in output creates relatively more jobs - even if they pay relatively less.)

Personal income

The model used to project the Ontario economy yields approximations of provincial incomes and personal incomes, although these figures must be considered even more tentative than many of our other projections.

The discussion here focusses on real personal disposable income per capita, with the nominal projection reduced to real terms by dividing by the national CPI in all provinces. A summary of results is given in Table 3.9 and Figure 3.17. (More detailed, year-by-year results are in Table 3.18 at

Figure 3.16
The unemployment rate by province/region



NOTE: See note to Figure 3.1.

the end of the chapter.)

It can be seen that real incomes are projected to grow only slowly throughout the 1980s - an inevitable consequence of relatively low real growth in the economy and of a gradual switch away from personal and foreign saving coupled with a high level of capital formation. Increased retention of corporate profit (for investment) and a reduction in the aggregate government deficit (especially via higher indirect taxation) also lead to relatively low growth in real personal income.

Rising oil and gas prices and the distribution of the resulting additional revenues, of course, have been and are a leading factor in this income-saving shift. Therefore, again not surprisingly, the projection shows continued relative movements across provinces in real personal income per capita. Table 3.9 and Figure 3.17 show that real personal incomes in Ontario were considerably above those of the nation as a whole through the end of the 1970s, although the gap did begin to narrow, especially against the West. In the 1980s, real personal incomes in the West, particularly Alberta, become relatively higher than those in Ontario. But note that even at the end of the decade, the ratio of Alberta's personal income to the national average (1.16) is about the same as the Ontario/Canada ratio of 1967-73 (1.15). Note also that the gap in personal incomes between the East and the national average is projected to close somewhat. This healthy result comes from the relatively low population growth in Quebec and the migrations from the Atlantic provinces.

The movement of Ontario personal income towards the national average has two major sources. The first is a gradual reduction in the formerly high level of the province's labour productivity relative to the Canadian average. The second is the terms-of-trade shift in favour of certain products, most notably mineral fuels, of which Ontario is a net importer. Figure 3.18 shows that the trends in the Ontario/Canada personal-income and productivity ratios have been downwards and are projected to continue so. It is the shift in the terms of trade that makes the personal-income ratio fall faster than the productivity ratio.

Output and employment: industrial detail

Much of Chapter 2's discussion of industrial detail at the national level also applies to Ontario - as do its caveats concerning the precision of individual

TABLE 3.9
Real personal disposable income per capita:
ratio of provincial/regional to national

	Annual average				
	1967-73	1974-80	1981-3	1984-6	1987-90
Ontario	1.15	1.09	1.07	1.05	1.02
East	0.86	0.87	0.87	0.89	0.90
Quebec	0.90	0.91	0.92	0.93	0.94
West	1.01	1.06	1.08	1.08	1.10
Alberta	1.00	1.05	1.12	1.14	1.16

NOTE: See note to Table 3.1.

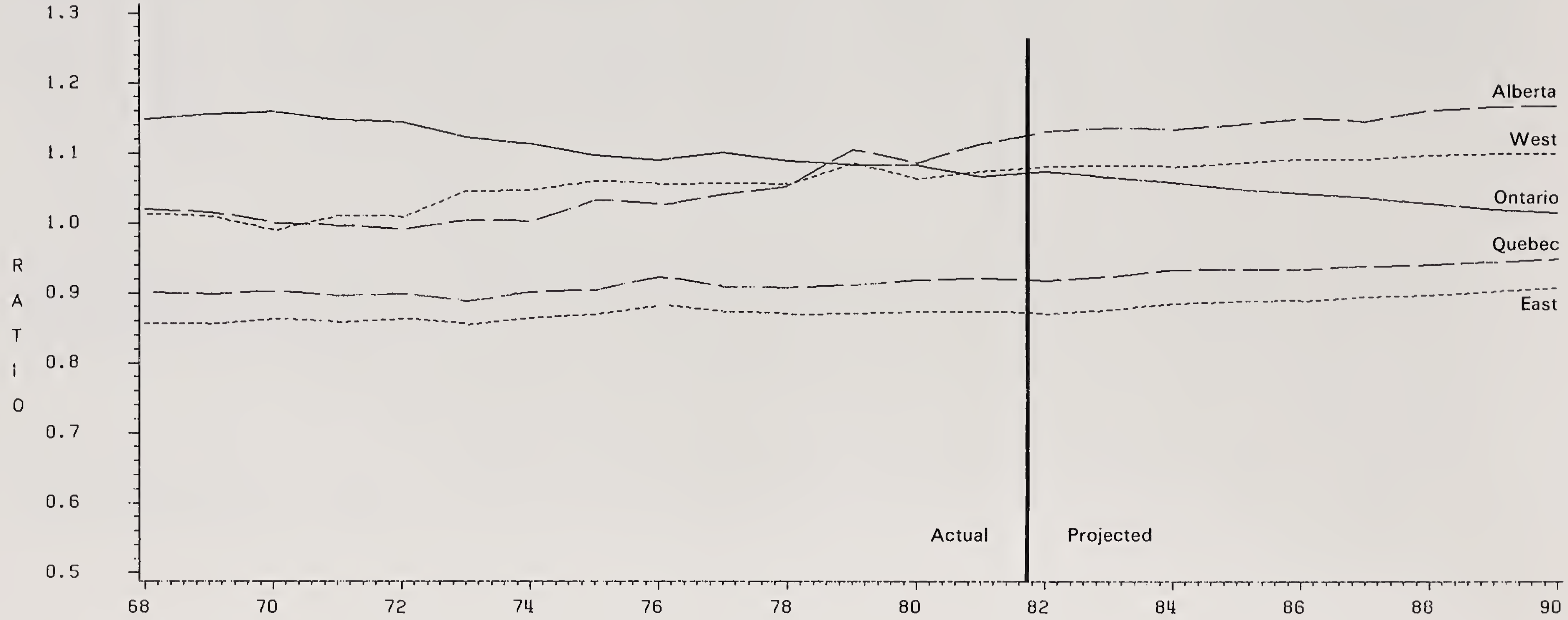
industrial projections. More results at the provincial level are summarized in Tables 3.10 and 3.11 and Figures 3.19 and 3.20; detailed breakdowns are in Tables 3.19 and 3.20 at the end of the chapter.

For the major industrial aggregates, Ontario's pattern is like Canada's. Output growth in its goods industries kept pace with growth in the service sector in the late 1960s and early 1970s, but in the later 1970s almost all its output growth was in services. During the 1980s, the goods sector is projected to recover somewhat, but its contribution to growth remains less than half that of services.

The pattern is still clearer for industry-by-industry employment. Even during the 1967-73 period, the bulk of employment creation was in the service sector, and the trend grew in the later 1970s. The projection has the greater part of the jobs created in the 1980s also falling within services. Indeed, manufacturing's combination of relatively low output growth and a slight rebound in labour productivity results in no net job creation in that sector during the 1980s.

Among the 1980s' growth rates of the individual manufacturing industries, the greatest is projected for machinery and other transportation equipment, reflecting supply to major development projects. (The growth rate projected for primary metals may be too low; major projects usually require considerable inputs of primary metal, and Ontario seems to have many opportunities for exporting steel to international markets.) Note, too, that while Ontario's share of construction is projected to drop considerably during the 1980s, the industry's growth rate remains a respectable 2.2 per cent per

Figure 3.17
Real personal income: ratio of provincial/regional to national



NOTE: See note to Figure 3.1.

Figure 3.18
Ontario's productivity and real income: ratios to Canada's

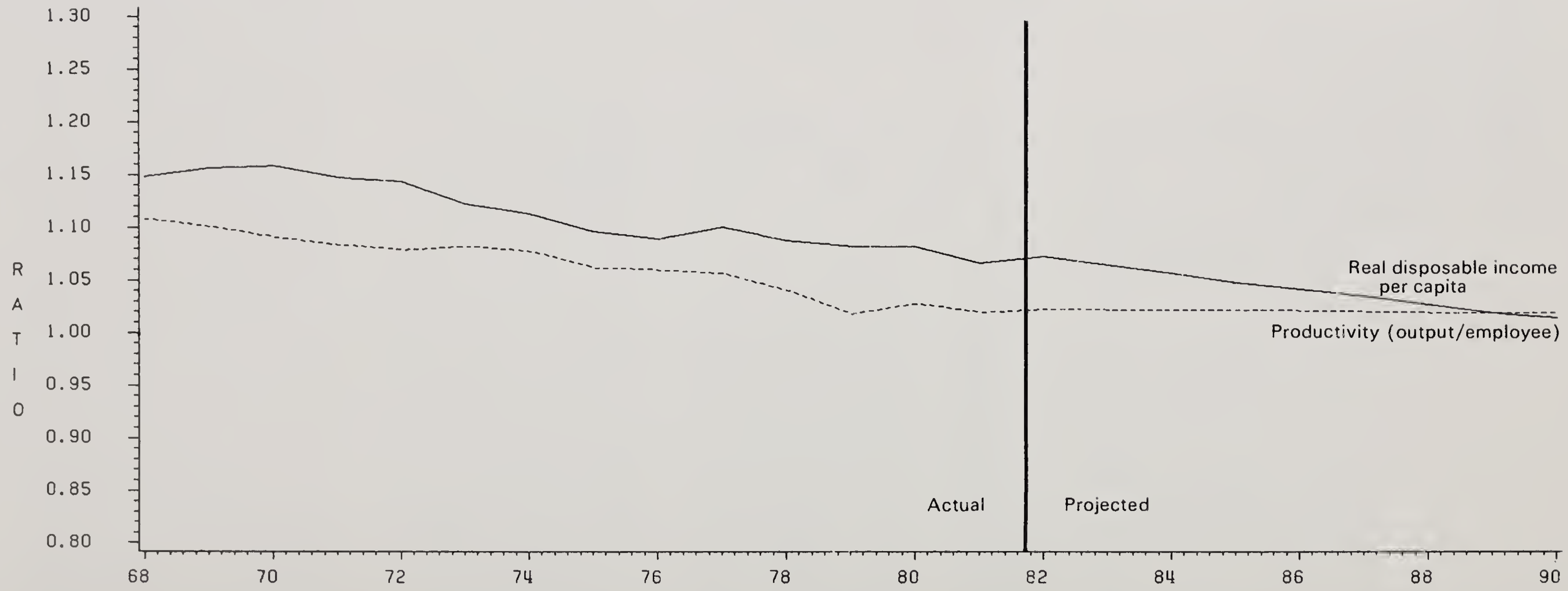


TABLE 3.10
Ontario's real output by industry: summary

	Annual average		
	1967-73	1974-80	1981-90
Growth rate			
Agriculture, fishing, & trapping	0.5	1.9	1.2
Forestry	2.3	0.6	2.7
Other mines & quarries	4.5	-3.5	-3.6
Food, feed, beverages, & tobacco	4.0	1.3	1.4
Textiles & clothing	8.3	1.7	-0.0
Wood & furniture	3.3	0.2	0.4
Paper, printing, & allied industries	4.0	2.1	0.9
Primary metal & metal fabricating	3.8	1.1	1.1
Motor vehicles & parts	2.0	-1.5	1.0
Machinery & other transportation equipment	11.8	2.6	3.1
Electrical products	6.0	0.2	3.1
Chemical, rubber, & petroleum products	7.6	2.5	2.9
Nonmetallic mineral products	5.9	-2.2	1.7
Other manufacturing industries	4.4	2.0	-0.5
Total manufacturing	5.7	1.0	1.4
Construction	3.5	-1.4	2.2
Electric power, water, & gas utilities	8.4	4.0	4.6
Total goods-producing industries	5.2	0.7	1.7
Transportation & storage	6.7	1.8	2.0
Communication	7.7	8.2	7.3
Trade	5.7	1.9	2.5
Finance, insurance, & real estate	5.7	4.6	3.8
Other service industries	5.7	5.4	4.6
Total service industries	5.9	4.1	3.9
Government sector	3.6	-1.9	1.3
Total: all sectors	5.3	2.0	2.9
Share of Ontario output			
Agriculture, fishing, & trapping	0.020	0.017	0.015
Forestry	0.003	0.002	0.002
Other mines & quarries	0.016	0.011	0.006
Food, feed, beverages, & tobacco	0.036	0.032	0.030
Textiles & clothing	0.014	0.014	0.013
Wood & furniture	0.009	0.009	0.007
Paper, printing, & allied industries	0.031	0.028	0.027
Primary metal & metal fabricating	0.060	0.054	0.050
Motor vehicles & parts	0.041	0.039	0.034
Machinery & other transportation equipment	0.026	0.029	0.028
Electrical products	0.027	0.026	0.023
Chemical, rubber, & petroleum products	0.034	0.036	0.038
Nonmetallic mineral products	0.011	0.010	0.008

TABLE 3.10 (continued)

	Annual average		
	1967-73	1974-80	1981-90
Other manufacturing industries	0.015	0.014	0.012
Total manufacturing	0.304	0.292	0.269
Construction	0.058	0.048	0.043
Electric power, water, & gas utilities	0.025	0.028	0.033
Total goods-producing industries	0.425	0.398	0.369
Transportation & storage	0.049	0.049	0.047
Communication	0.026	0.037	0.054
Trade	0.116	0.119	0.115
Finance, insurance, & real estate	0.124	0.138	0.157
Other service industries	0.122	0.145	0.169
Total service industries	0.436	0.488	0.542
Government sector	0.138	0.114	0.089

year - just a little below the province-wide average. In other words, Ontario's share drops not so much because of reduced activity in the province as because of increased activity in the West. However, the projection of 3.8 per cent growth in employment creation for construction is almost surely too high in relation to its output growth. This result partly reflects the low cyclical trough in which the reference period begins and partly an over-pessimistic projection of productivity decline in the sector (although there was also a decline in the 1974-80 period).

The two predecessors of this study (Foot et al. 1977; Sawyer, Dungan and Winder 1978) projected that the service sectors would tend to dominate future growth in output and especially employment. Of all the projections made in those studies, this is the one proven most accurate by events, and it seems among the safest projections to make for the 1980s.

Figure 3.19
Ontario's shares of output by industrial aggregate

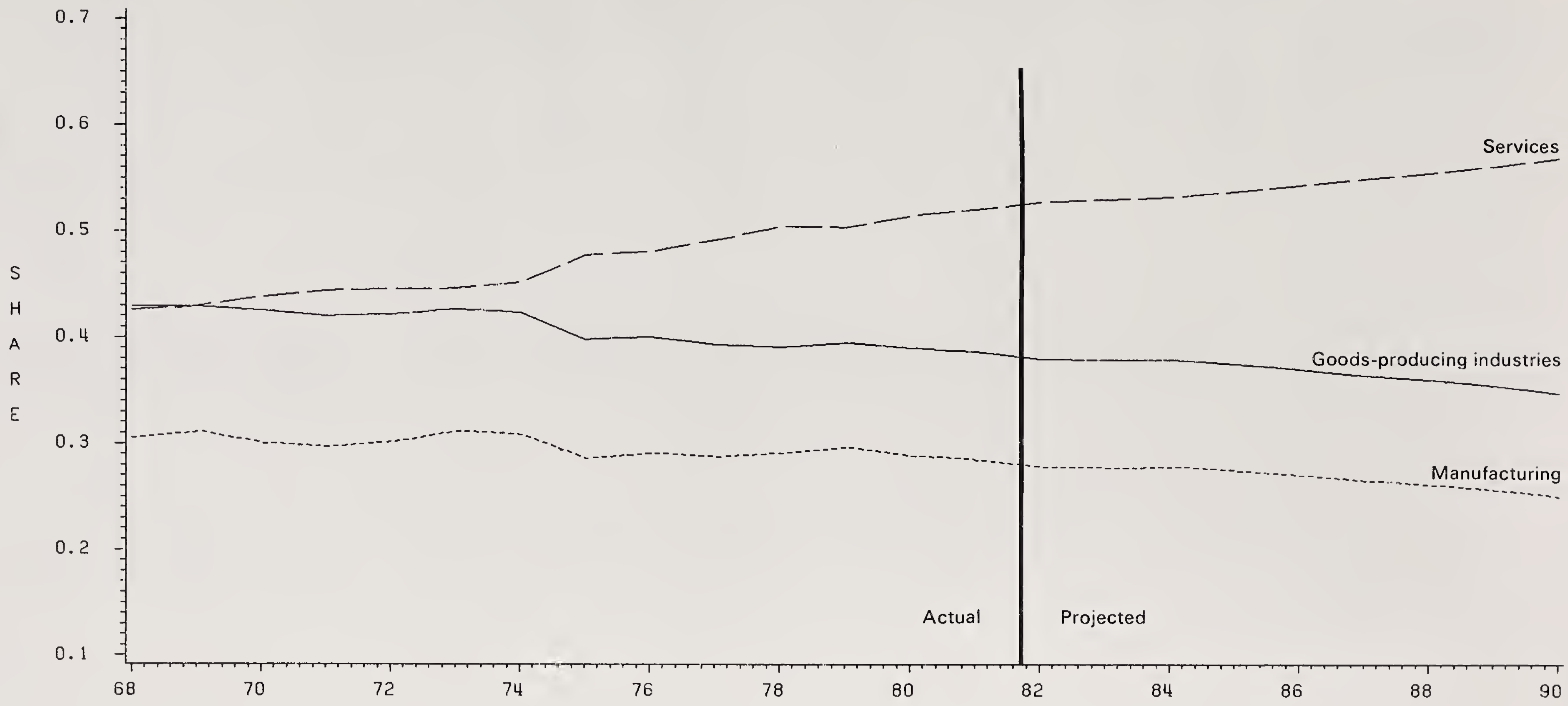


Figure 3.20
Ontario's employment by industrial aggregate

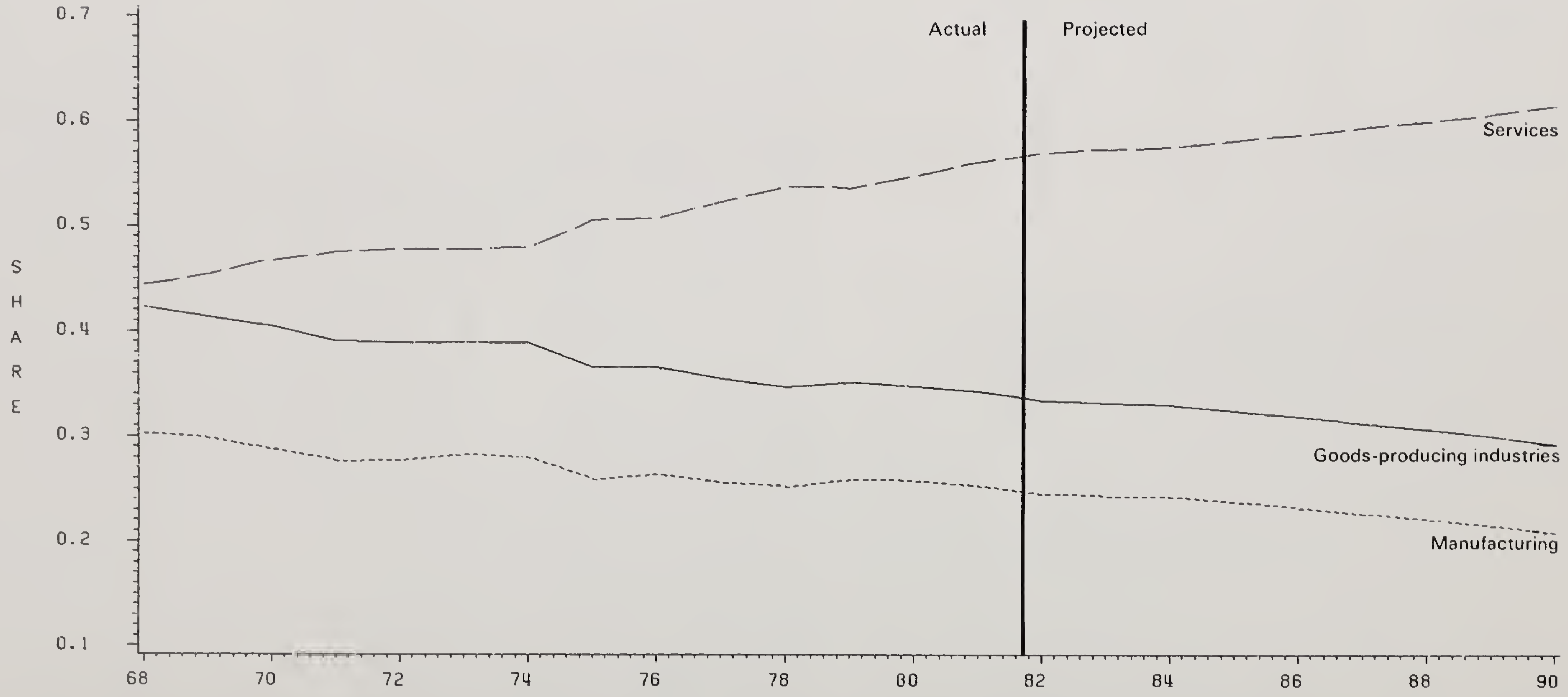


TABLE 3.11
Ontario's employment by industry: summary

	Annual average		
	1967-73	1974-80	1981-90
Growth rate			
Agriculture, fishing, & trapping	-1.2	1.2	-2.8
Forestry	-4.0	1.4	2.5
Other mines & quarries	3.0	1.6	-0.2
Food, feed, beverages, & tobacco	1.1	1.9	0.8
Textiles & clothing	2.9	1.4	-2.0
Wood & furniture	1.4	0.2	-1.4
Paper, printing, & allied industries	1.0	2.5	0.1
Primary metal & metal fabricating	1.7	1.4	0.4
Motor vehicles & parts	3.5	-1.5	1.3
Machinery & other transportation equipment	0.8	3.9	-0.2
Electrical products	2.0	0.4	-0.5
Chemical, rubber, & petroleum products	1.2	3.3	1.0
Nonmetallic mineral products	2.0	-0.3	1.2
Other manufacturing industries	3.5	0.7	-2.0
Total manufacturing	1.8	1.4	0.0
Construction	2.3	-0.8	3.8
Electric power, water, & gas utilities	3.4	2.8	2.7
Total goods-producing industries	1.5	1.1	0.4
Transportation & storage	1.8	1.5	0.2
Communication	4.0	3.9	3.4
Trade	3.9	2.9	2.2
Finance, insurance, & real estate	5.0	5.8	3.2
Other service industries	5.5	6.6	4.5
Total service industries	4.4	4.7	3.4
Government sector	4.4	-0.6	0.8
Total: all sectors	3.2	2.7	2.2
Share of Ontario employment			
Agriculture, fishing, & trapping	0.042	0.032	0.023
Forestry	0.004	0.003	0.003
Other mines & quarries	0.009	0.008	0.006
Food, feed, beverages, & tobacco	0.034	0.030	0.028
Textiles & clothing	0.022	0.020	0.017
Wood & furniture	0.011	0.010	0.088
Paper, printing, & allied industries	0.028	0.024	0.023
Primary metal & metal fabricating	0.052	0.047	0.042
Motor vehicles & parts	0.027	0.026	0.022
Machinery & other transportation equipment	0.032	0.029	0.027
Electrical products	0.030	0.026	0.021
Chemical, rubber, & petroleum products	0.024	0.022	0.022

TABLE 3.11 (continued)

	Annual average		
	1967-73	1974-80	1981-90
Nonmetallic mineral products	0.009	0.008	0.007
Other manufacturing industries	0.021	0.019	0.015
Total manufacturing	0.290	0.260	0.232
Construction	0.053	0.048	0.046
Electric power, water, & gas utilities	0.009	0.009	0.009
Total goods-producing industries	0.406	0.360	0.319
Transportation & storage	0.046	0.042	0.037
Communication	0.022	0.025	0.027
Trade	0.161	0.167	0.168
Finance, insurance, & real estate	0.052	0.059	0.068
Other service industries	0.182	0.226	0.286
Total service industries	0.462	0.519	0.586
Government sector	0.132	0.121	0.095

Table 3.12
Ontario's output shares by industry

	1977	1978	1979	1980	1981	1982	1983	1984
1 AGRICULTURE, FISHING & TRAPPING	0.233	0.225	0.241	0.231	0.230	0.228	0.226	0.224
2 FORESTRY	0.151	0.147	0.150	0.148	0.148	0.147	0.147	0.146
3 MINERAL FUEL MINES & WELLS	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
4 OTHER MINES & QUARRIES	0.256	0.208	0.186	0.190	0.183	0.177	0.170	0.163
5 FOOD, FEED, BEVERAGES & TOBACCO	0.450	0.426	0.424	0.424	0.424	0.423	0.423	0.423
6 TEXTILES & CLOTHING	0.380	0.376	0.377	0.379	0.382	0.385	0.387	0.390
7 WOOD & FURNITURE	0.243	0.230	0.226	0.225	0.221	0.218	0.215	0.211
8 PAPER, PRINTING & ALLIED INDUSTRIES	0.398	0.387	0.385	0.386	0.385	0.385	0.384	0.384
9 PRIMARY METAL & METAL FABRICATING	0.607	0.578	0.577	0.577	0.576	0.575	0.574	0.573
10 MOTOR VEHICLES & PARTS	0.920	0.889	0.888	0.886	0.883	0.881	0.878	0.875
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	0.562	0.572	0.571	0.570	0.569	0.568	0.566	0.565
12 ELECTRICAL PRODUCTS	0.671	0.679	0.680	0.679	0.678	0.677	0.677	0.676
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	0.565	0.564	0.562	0.561	0.559	0.557	0.555	0.553
14 NON-METALLIC MINERAL PRODUCTS	0.475	0.461	0.458	0.455	0.450	0.445	0.440	0.435
15 OTHER MANUFACTURING INDUSTRIES	0.668	0.650	0.650	0.650	0.651	0.651	0.652	0.652
TOTAL MANUFACTURING	0.539	0.527	0.523	0.518	0.518	0.516	0.516	0.517
16 CONSTRUCTION	0.298	0.288	0.266	0.272	0.267	0.262	0.257	0.252
17 ELECTRIC POWER, WATER & GAS UTILITIES	0.340	0.336	0.331	0.333	0.332	0.331	0.331	0.330
TOTAL GOODS-PRODUCING INDUSTRIES	0.420	0.412	0.406	0.401	0.398	0.395	0.393	0.392
18 TRANSPORTATION & STORAGE	0.327	0.330	0.322	0.322	0.321	0.321	0.321	0.321
19 COMMUNICATION	0.414	0.412	0.403	0.403	0.402	0.402	0.401	0.401
20 TRADE	0.386	0.384	0.375	0.374	0.371	0.369	0.368	0.367
21 FINANCE, INSURANCE & REAL ESTATE	0.439	0.439	0.433	0.433	0.431	0.429	0.428	0.427
22 OTHER SERVICE INDUSTRIES	0.408	0.412	0.405	0.405	0.403	0.401	0.400	0.400
TOTAL SERVICE INDUSTRIES	0.401	0.402	0.394	0.395	0.393	0.392	0.391	0.391
23 GOVERNMENT SECTOR	0.386	0.378	0.368	0.368	0.365	0.362	0.361	0.360
TOTAL: ALL SECTORS (SHARE OF REAL GDP AT FACTOR COST)	0.406	0.401	0.393	0.392	0.390	0.387	0.386	0.386

	1985	1986	1987	1988	1989	1990
1 AGRICULTURE, FISHING & TRAPPING	0.223	0.221	0.219	0.217	0.216	0.214
2 FORESTRY	0.146	0.145	0.145	0.144	0.144	0.143
3 MINERAL FUEL MINES & WELLS	0.002	0.002	0.002	0.002	0.002	0.002
4 OTHER MINES & QUARRIES	0.157	0.151	0.145	0.139	0.133	0.127
5 FOOD, FEED, BEVERAGES & TOBACCO	0.423	0.423	0.422	0.422	0.422	0.421
6 TEXTILES & CLOTHING	0.392	0.395	0.398	0.400	0.403	0.405
7 WOOD & FURNITURE	0.208	0.204	0.201	0.198	0.195	0.191
8 PAPER, PRINTING & ALLIED INDUSTRIES	0.383	0.383	0.382	0.381	0.381	0.380
9 PRIMARY METAL & METAL FABRICATING	0.571	0.570	0.569	0.568	0.567	0.565
10 MOTOR VEHICLES & PARTS	0.872	0.869	0.866	0.863	0.860	0.857
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	0.563	0.562	0.560	0.558	0.557	0.555
12 ELECTRICAL PRODUCTS	0.675	0.675	0.674	0.673	0.672	0.672
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	0.551	0.549	0.547	0.545	0.543	0.540
14 NON-METALLIC MINERAL PRODUCTS	0.429	0.424	0.418	0.413	0.407	0.402
15 OTHER MANUFACTURING INDUSTRIES	0.653	0.653	0.654	0.654	0.655	0.655
TOTAL MANUFACTURING	0.516	0.515	0.514	0.512	0.510	0.507
16 CONSTRUCTION	0.247	0.242	0.237	0.232	0.226	0.221
17 ELECTRIC POWER, WATER & GAS UTILITIES	0.329	0.329	0.328	0.327	0.326	0.326
TOTAL GOODS-PRODUCING INDUSTRIES	0.390	0.387	0.384	0.380	0.377	0.373
18 TRANSPORTATION & STORAGE	0.321	0.321	0.321	0.320	0.320	0.320
19 COMMUNICATION	0.401	0.401	0.401	0.401	0.400	0.400
20 TRADE	0.366	0.365	0.364	0.363	0.362	0.361
21 FINANCE, INSURANCE & REAL ESTATE	0.427	0.426	0.426	0.425	0.424	0.424
22 OTHER SERVICE INDUSTRIES	0.399	0.399	0.398	0.397	0.397	0.396
TOTAL SERVICE INDUSTRIES	0.391	0.391	0.390	0.390	0.389	0.389
23 GOVERNMENT SECTOR	0.359	0.358	0.358	0.357	0.356	0.355
TOTAL: ALL SECTORS (SHARE OF REAL GDP AT FACTOR COST)	0.385	0.384	0.383	0.381	0.380	0.378

NOTE: For each industry, shares across all provinces total one.

Table 3.13
The Ontario economy: summary by year

	1977	1978	1979	1980	1981	1982	1983	1984
PROVINCIAL GROSS DOMESTIC PRODUCT	83067	90130	101594	112685	125915	139800	158553	178968
REAL PROVINCIAL GDP AT FACTOR COST	43676	44595	45130	45091	46016	46015	47720	49640
DEFLATOR, PROV'L GDP AT FACTOR COST (71=1.0)	1.66	1.77	1.98	2.20	2.36	2.58	2.83	3.08
REAL PERSONAL DISP. INCOME PER CAP. ($'000)	4.062	4.089	4.118	4.131	4.024	3.975	4.032	4.071
ANNUAL WAGES & SALARIES PER EMPLOYEE ($'000)	13.107	13.776	14.535	16.001	17.438	19.328	21.073	22.802
GDP AT FACTOR COST PER EMPLOYEE ($71 '000)	11.759	11.594	11.259	11.089	10.992	10.956	11.052	11.191
LABOUR FORCE ('000)	3995	4147	4288	4366	4482	4565	4669	4739
EMPLOYMENT ('000)	3714	3846	4008	4066	4186	4200	4318	4436
UNEMPLOYMENT RATE (%)	7.02	7.25	6.52	6.87	6.59	8.01	7.52	6.40
REAL DOMESTIC PRODUCT - MANUFACTURING	12519	12936	13350	12964	13067	12764	13203	13766
RDP - GOODS-PRODUCING INDUSTRIES	17153	17394	17785	17542	17772	17438	18037	18760
RDP - SERVICE INDUSTRIES	21446	22451	22689	23159	23918	24227	25260	26383

	1985	1986	1987	1988	1989	1990
PROVINCIAL GROSS DOMESTIC PRODUCT	201014	226118	252016	278949	309390	344026
REAL PROVINCIAL GDP AT FACTOR COST	51187	52898	54593	56394	58037	59874
DEFLATOR, PROV'L GDP AT FACTOR COST (71=1.0)	3.34	3.64	3.92	4.22	4.54	4.89
REAL PERSONAL DISP. INCOME PER CAP. ($'000)	4.060	4.082	4.124	4.201	4.242	4.307
ANNUAL WAGES & SALARIES PER EMPLOYEE ($'000)	24.623	26.603	28.751	30.854	33.033	35.229
GDP AT FACTOR COST PER EMPLOYEE ($71 '000)	11.300	11.445	11.570	11.702	11.789	11.902
LABOUR FORCE ('000)	4819	4907	4982	5074	5168	5272
EMPLOYMENT ('000)	4530	4622	4718	4819	4923	5031
UNEMPLOYMENT RATE (%)	6.01	5.80	5.29	5.03	4.75	4.59
REAL DOMESTIC PRODUCT - MANUFACTURING	14010	14273	14460	14713	14861	14950
RDP - GOODS-PRODUCING INDUSTRIES	19145	19552	19884	20292	20567	20792
RDP - SERVICE INDUSTRIES	27473	28696	29963	31261	32546	34069

NOTE: Nominal values in millions of current dollars; real values in millions of 1971 dollars.

PERCENTAGE CHANGE

	1977	1978	1979	1980	1981	1982	1983	1984
PROVINCIAL GROSS DOMESTIC PRODUCT	9.24	8.50	12.72	10.92	11.74	11.03	13.41	12.88
REAL PROVINCIAL GDP AT FACTOR COST	2.61	2.11	1.20	-0.09	2.05	-0.00	3.71	4.02
DEFLATOR, PROV'L GDP AT FACTOR COST	6.19	6.60	11.44	11.20	7.36	9.55	9.56	8.99
REAL PERSONAL DISP. INCOME PER CAP.	1.73	0.67	0.72	0.31	-2.60	-1.21	1.43	0.96
ANNUAL WAGES & SALARIES PER EMPLOYEE	8.21	5.10	5.51	10.09	8.98	10.84	9.03	8.21
GDP AT FACTOR COST PER EMPLOYEE	0.73	-1.40	-2.89	-1.51	-0.88	-0.33	0.88	1.26
LABOUR FORCE	2.80	3.81	3.40	1.82	2.65	1.86	2.26	1.50
EMPLOYMENT	1.87	3.55	4.21	1.45	2.95	0.33	2.80	2.73
UNEMPLOYMENT RATE (%) *	0.85	0.23	-0.73	0.34	-0.27	1.41	-0.49	-1.12
REAL DOMESTIC PRODUCT - MANUFACTURING	1.30	3.33	3.20	-2.89	0.79	-2.32	3.44	4.27
RDP - GOODS-PRODUCING INDUSTRIES	0.89	1.40	2.25	-1.37	1.31	-1.88	3.43	4.01
RDP - SERVICE INDUSTRIES	5.01	4.69	1.06	2.07	3.28	1.30	4.26	4.45

	1985	1986	1987	1988	1989	1990
PROVINCIAL GROSS DOMESTIC PRODUCT	12.32	12.49	11.45	10.69	10.91	11.20
REAL PROVINCIAL GDP AT FACTOR COST	3.12	3.34	3.20	3.30	2.91	3.17
DEFLATOR, PROV'L GDP AT FACTOR COST	8.32	8.82	7.91	7.51	7.73	7.69
REAL PERSONAL DISP. INCOME PER CAP.	-0.25	0.54	1.02	1.88	0.97	1.53
ANNUAL WAGES & SALARIES PER EMPLOYEE	7.99	8.04	8.07	7.32	7.06	6.65
GDP AT FACTOR COST PER EMPLOYEE	0.97	1.28	1.10	1.14	0.74	0.95
LABOUR FORCE	1.70	1.81	1.53	1.85	1.85	2.01
EMPLOYMENT	2.12	2.04	2.08	2.13	2.15	2.19
UNEMPLOYMENT RATE (%) *	-0.39	-0.21	-0.51	-0.26	-0.28	-0.16
REAL DOMESTIC PRODUCT - MANUFACTURING	1.77	1.87	1.31	1.75	1.00	0.60
RDP - GOODS-PRODUCING INDUSTRIES	2.05	2.13	1.69	2.05	1.35	1.10
RDP - SERVICE INDUSTRIES	4.13	4.45	4.42	4.33	4.11	4.68

NOTE: * indicates change in levels.

Table 3.14
Ontario's economy: ratio to Canada's

	1977	1978	1979	1980	1981	1982	1983	1984
GROSS DOMESTIC PRODUCT	0.391	0.382	0.377	0.378	0.374	0.369	0.366	0.364
REAL GDP AT FACTOR COST	0.406	0.401	0.393	0.392	0.390	0.387	0.386	0.386
DEFLATOR, GDP AT FACTOR COST	0.948	0.938	0.939	0.942	0.934	0.926	0.920	0.918
REAL PERSONAL DISPOSABLE INCOME PER CAP.	1.100	1.087	1.082	1.081	1.065	1.071	1.064	1.056
ANNUAL WAGES & SALARIES PER EMPLOYEE ($'000)	1.063	1.058	1.039	1.050	1.040	1.040	1.037	1.034
GDP AT FACTOR COST PER EMPLOYEE	1.055	1.039	1.017	1.027	1.019	1.022	1.021	1.021
LABOUR FORCE	0.380	0.381	0.383	0.379	0.379	0.377	0.376	0.375
EMPLOYMENT	0.385	0.386	0.387	0.382	0.383	0.379	0.378	0.378
UNEMPLOYMENT RATE (DIFFERENCE)	-1.095	-1.129	-0.947	-0.665	-0.983	-0.407	-0.523	-0.716
REAL DOMESTIC PRODUCT - MANUFACTURING	0.539	0.527	0.523	0.518	0.518	0.516	0.516	0.517
RDP - GOODS-PRODUCING INDUSTRIES	0.420	0.412	0.406	0.401	0.398	0.395	0.393	0.392
RDP - SERVICE INDUSTRIES	0.401	0.402	0.394	0.395	0.393	0.392	0.391	0.391

	1985	1986	1987	1988	1989	1990
GROSS DOMESTIC PRODUCT	0.365	0.365	0.363	0.360	0.359	0.358
REAL GDP AT FACTOR COST	0.385	0.384	0.383	0.381	0.380	0.378
DEFLATOR, GDP AT FACTOR COST	0.919	0.921	0.921	0.917	0.917	0.919
REAL PERSONAL DISPOSABLE INCOME PER CAP.	1.048	1.041	1.035	1.026	1.019	1.014
ANNUAL WAGES & SALARIES PER EMPLOYEE ($'000)	1.031	1.030	1.029	1.026	1.025	1.023
GDP AT FACTOR COST PER EMPLOYEE	1.021	1.020	1.020	1.019	1.018	1.018
LABOUR FORCE	0.374	0.373	0.372	0.370	0.369	0.367
EMPLOYMENT	0.377	0.376	0.375	0.374	0.373	0.372
UNEMPLOYMENT RATE (DIFFERENCE)	-0.864	-0.953	-0.967	-1.057	-1.122	-1.114
REAL DOMESTIC PRODUCT - MANUFACTURING	0.516	0.515	0.514	0.512	0.510	0.507
RDP - GOODS-PRODUCING INDUSTRIES	0.390	0.387	0.384	0.380	0.377	0.373
RDP - SERVICE INDUSTRIES	0.391	0.391	0.390	0,390	0.389	0.389

Table 3.15
Real output and output deflators by province

REAL GDP

(MILLIONS OF 1971 DOLLARS)

	1977	1978	1979	1980	1981	1982	1983	1984
CANADA	107499	111249	114812	115061	118064	118777	123498	128602
NEWFOUNDLAND	1507	1494	1628	1596	1635	1649	1706	1767
PRINCE EDWARD ISLAND	288	304	311	308	313	315	325	336
NOVA SCOTIA	2594	2663	2710	2716	2764	2782	2881	2984
NEW BRUNSWICK	2022	2037	2102	2096	2137	2150	2228	2311
QUEBEC	25428	26062	27169	27210	27811	27907	28921	30031
ONTARIO	43676	44595	45130	45091	46016	46015	47720	49640
MANITOBA	4320	4352	4372	4412	4488	4503	4667	4842
SASKATCHEWAN	4091	4262	4271	4400	4544	4597	4804	5012
ALBERTA	10986	11767	12759	12827	13487	13842	14609	15402
BRITISH COLUMBIA	12222	12825	13263	13325	13788	13934	14545	15179
YUKON & N.W.T.	266	269	283	281	283	283	291	298
EXTERNAL & DISCREPANCY	99	618	815	800	800	800	800	800

	1985	1986	1987	1988	1989	1990
CANADA	132902	137741	142618	147921	152794	158245
NEWFOUNDLAND	1821	1881	1941	2010	2068	2133
PRINCE EDWARD ISLAND	345	356	367	379	389	401
NOVA SCOTIA	3076	3180	3286	3400	3506	3627
NEW BRUNSWICK	2386	2470	2555	2647	2732	2829
QUEBEC	30939	31972	32987	34089	35110	36272
ONTARIO	51187	52898	54593	56394	58037	59874
MANITOBA	4994	5167	5342	5531	5707	5911
SASKATCHEWAN	5197	5412	5625	5860	6077	6315
ALBERTA	16105	16904	17766	18749	19647	20623
BRITISH COLUMBIA	15746	16388	17037	17737	18388	19120
YUKON & N.W.T.	304	311	318	326	332	340
EXTERNAL & DISCREPANCY	800	800	800	800	800	800

GDP DEFLATORS

(1971 = 1.0)

	1977	1978	1979	1980	1981	1982	1983	1984
CANADA	1.75	1.89	2.10	2.33	2.52	2.79	3.08	3.36
NEWFOUNDLAND	1.75	1.88	2.04	2.30	2.45	2.68	2.93	3.20
PRINCE EDWARD ISLAND	1.86	2.03	2.21	2.47	2.63	2.88	3.17	3.47
NOVA SCOTIA	1.80	1.94	2.12	2.36	2.53	2.79	3.07	3.37
NEW BRUNSWICK	1.81	1.99	2.19	2.36	2.52	2.75	3.01	3.27
QUEBEC	1.72	1.85	2.02	2.25	2.41	2.64	2.88	3.13
ONTARIO	1.66	1.77	1.98	2.20	2.36	2.58	2.83	3.08
MANITOBA	1.72	1.90	2.12	2.31	2.47	2.70	2.95	3.22
SASKATCHEWAN	1.87	2.07	2.37	2.64	2.88	3.22	3.57	3.94
ALBERTA	2.05	2.23	2.49	2.84	3.21	3.70	4.18	4.61
BRITISH COLUMBIA	1.82	1.92	2.20	2.37	2.55	2.82	3.10	3.39
YUKON & N.W.T.	2.25	2.59	2.68	2.79	2.95	3.23	3.52	3.83

	1985	1986	1987	1988	1989	1990
CANADA	3.64	3.95	4.26	4.60	4.96	5.33
NEWFOUNDLAND	3.46	3.76	4.05	4.43	4.77	5.14
PRINCE EDWARD ISLAND	3.79	4.13	4.48	4.85	5.24	5.67
NOVA SCOTIA	3.67	4.01	4.34	4.70	5.09	5.49
NEW BRUNSWICK	3.54	3.85	4.14	4.46	4.79	5.15
QUEBEC	3.39	3.68	3.96	4.26	4.58	4.92
ONTARIO	3.34	3.64	3.92	4.22	4.54	4.89
MANITOBA	3.48	3.78	4.07	4.38	4.72	5.07
SASKATCHEWAN	4.28	4.67	5.06	5.51	5.98	6.47
ALBERTA	4.93	5.31	5.70	6.21	6.68	7.11
BRITISH COLUMBIA	3.67	3.99	4.29	4.64	4.99	5.36
YUKON & N.W.T.	4.14	4.48	4.84	5.22	5.62	6.03

Table 3.15 continued

REAL GDP

(YEAR-OVER-YEAR PERCENTAGE CHANGE)

	1977	1978	1979	1980	1981	1982	1983	1984
CANADA	2.81	3.49	3.20	0.22	2.61	0.60	3.97	4.13
NEWFOUNDLAND	0.78	-0.84	8.98	-2.00	2.46	0.87	3.44	3.57
PRINCE EDWARD ISLAND	1.43	5.49	2.05	-0.88	1.85	0.64	3.11	3.22
NOVA SCOTIA	1.32	2.63	1.77	0.23	1.77	0.67	3.53	3.57
NEW BRUNSWICK	1.23	0.77	3.19	-0.31	1.96	0.63	3.64	3.72
QUEBEC	2.74	2.49	4.25	0.15	2.21	0.35	3.63	3.84
ONTARIO	2.61	2.11	1.20	-0.09	2.05	-0.00	3.71	4.02
MANITOBA	0.78	0.73	0.46	0.92	1.72	0.33	3.65	3.75
SASKATCHEWAN	1.75	4.20	0.21	3.01	3.27	1.18	4.51	4.32
ALBERTA	5.00	7.11	8.42	0.53	5.15	2.64	5.54	5.43
BRITISH COLUMBIA	3.37	4.94	3.41	0.47	3.47	1.06	4.39	4.36
YUKON & N.W.T.	8.83	1.11	5.08	-0.83	0.65	0.30	2.63	2.43
EXTERNAL & DISCREPANCY	45.49	521.11	31.85	-1.79	0.0	0.0	0.0	0.0

	1985	1986	1987	1988	1989	1990
CANADA	3.34	3.64	3.54	3.72	3.29	3.57
NEWFOUNDLAND	3.06	3.34	3.16	3.55	2.90	3.15
PRINCE EDWARD ISLAND	2.90	3.08	3.08	3.12	2.82	3.13
NOVA SCOTIA	3.11	3.37	3.33	3.47	3.13	3.44
NEW BRUNSWICK	3.24	3.52	3.46	3.57	3.22	3.55
QUEBEC	3.02	3.34	3.17	3.34	2.99	3.31
ONTARIO	3.12	3.34	3.20	3.30	2.91	3.17
MANITOBA	3.14	3.47	3.39	3.52	3.19	3.56
SASKATCHEWAN	3.69	4.14	3.93	4.19	3.70	3.92
ALBERTA	4.56	4.96	5.10	5.53	4.79	4.97
BRITISH COLUMBIA	3.74	4.07	3.96	4.11	3.67	3.98
YUKON & N.W.T.	2.08	2.25	2.25	2.43	1.99	2.24
EXTERNAL & DISCREPANCY	0.0	0.0	0.0	0.0	0.0	0.0

GDP DEFLATORS

(YEAR-OVER-YEAR PERCENTAGE CHANGE)

	1977	1978	1979	1980	1981	1982	1983	1984
CANADA	6.30	7.68	11.36	10.88	8.18	10.60	10.20	9.31
NEWFOUNDLAND	10.40	7.32	8.33	12.65	6.87	9.19	9.24	9.12
PRINCE EDWARD ISLAND	4.62	9.15	9.09	11.83	6.49	9.60	9.78	9.63
NOVA SCOTIA	8.04	7.91	9.13	11.52	7.20	10.20	10.19	9.73
NEW BRUNSWICK	5.73	9.96	9.81	7.93	6.71	9.20	9.24	8.89
QUEBEC.	4.83	7.73	9.16	11.15	7.16	9.33	9.33	8.79
ONTARIO	6.19	6.60	11.44	11.20	7.36	9.55	9.56	8.99
MANITOBA	4.37	10.34	11.74	8.66	7.03	9.30	9.36	9.08
SASKATCHEWAN	2.22	10.71	14.84	11.18	9.09	11.69	11.01	10.25
ALBERTA	9.56	8.76	11.40	14.26	12.82	15.40	12.89	10.35
BRITISH COLUMBIA	7.19	5.44	14.14	7.85	7.66	10.50	10.15	9.22
YUKON & N.W.T.	17.50	15.04	3.65	3.97	5.58	9.51	9.14	8.85

	1985	1986	1987	1988	1989	1990
CANADA	8.12	8.63	7.85	7.96	7.77	7.53
NEWFOUNDLAND	8.34	8.64	7.79	9.33	7.74	7.66
PRINCE EDWARD ISLAND	9.03	9.23	8.36	8.20	8.19	8.09
NOVA SCOTIA	8.79	9.19	8.40	8.31	8.21	7.98
NEW BRUNSWICK	8.28	8.58	7.69	7.54	7.56	7.48
QUEBEC	8.15	8.58	7.68	7.40	7.55	7.51
ONTARIO	8.32	8.82	7.91	7.51	7.73	7.69
MANITOBA	8.20	8.55	7.69	7.63	7.67	7.62
SASKATCHEWAN	8.79	9.06	8.29	8.88	8.50	8.22
ALBERTA	6.93	7.79	7.42	8.80	7.55	6.56
BRITISH COLUMBIA	8.26	8.59	7.75	7.93	7.64	7.41
YUKON & N.W.T.	7.87	8.32	7.92	7.88	7.69	7.35

Table 3.16
Ontario's labour force and employment variables

	1977	1978	1979	1980	1981	1982	1983	1984
POPULATION	8354	8440	8503	8591	8680	8769	8858	8946
SOURCE POPULATION	6210	6333	6438	6536	6616	6706	6789	6867
LABOUR FORCE	3995	4147	4288	4366	4482	4565	4669	4739
EMPLOYMENT	3714	3846	4008	4066	4186	4200	4318	4436
PARTICIPATION RATE	64.33	65.48	66.59	66.79	67.73	68.08	68.77	69.01
UNEMPLOYMENT RATE	7.02	7.25	6.52	6.87	6.59	8.01	7.52	6.40

	1985	1986	1987	1988	1989	1990
POPULATION	9032	9116	9198	9277	9354	9427
SOURCE POPULATION	6945	7022	7098	7162	7220	7284
LABOUR FORCE	4819	4907	4982	5074	5168	5272
EMPLOYMENT	4530	4622	4718	4819	4923	5031
PARTICIPATION RATE	69.39	69.88	70.19	70.85	71.58	72.38
UNEMPLOYMENT RATE	6.01	5.80	5.29	5.03	4.75	4.59

(YEAR-OVER-YEAR PERCENTAGE CHANGE)

	1977	1978	1979	1980	1981	1982	1983	1984
POPULATION	1.09	1.04	0.74	1.03	1.03	1.03	1.01	0.99
SOURCE POPULATION	2.07	1.98	1.65	1.53	1.22	1.37	1.23	1.16
LABOUR FORCE	2.80	3.81	3.40	1.82	2.65	1.86	2.26	1.50
EMPLOYMENT	1.87	3.55	4.21	1.45	2.95	0.33	2.80	2.73

(YEAR-TO-YEAR CHANGE)

	1977	1978	1979	1980	1981	1982	1983	1984
PARTICIPATION RATE	0.46	1.15	1.11	0.20	0.94	0.34	0.69	0.24
UNEMPLOYMENT RATE	0.85	0.23	-0.73	0.34	-0.27	1.41	-0.49	-1.12

(YEAR-OVER-YEAR PER-CENT CHANGE)

	1985	1986	1987	1988	1989	1990
POPULATION	0.96	0.93	0.90	0.86	0.82	0.78
SOURCE POPULATION	1.14	1.11	1.08	0.91	0.81	0.88
LABOUR FORCE	1.70	1.81	1.53	1.85	1.85	2.01
EMPLOYMENT	2.12	2.04	2.08	2.13	2.15	2.19

(YEAR-TO-YEAR CHANGE)

	1985	1986	1987	1988	1989	1990
PARTICIPATION RATE	0.38	0.48	0.32	0.66	0.73	0.80
UNEMPLOYMENT RATE	-0.39	-0.21	-0.51	-0.26	-0.28	-0.16

NOTE: Levels in thousands.

Table 3.17
Labour force and employment variables by province

PARTICIPATION RATE

	1977	1978	1979	1980	1981	1982	1983	1984
CANADA	61.57	62.61	63.36	64.01	64.70	65.15	65.97	66.33
NEWFOUNDLAND	50.72	51.71	52.66	53.08	53.20	54.14	55.11	55.61
PRINCE EDWARD ISLAND	56.98	57.90	59.29	59.68	59.10	59.62	60.16	60.30
NOVA SCOTIA	55.21	56.35	56.94	57.87	57.80	58.46	59.54	60.06
NEW BRUNSWICK	53.74	55.01	55.34	55.99	56.71	57.23	58.10	58.44
QUEBEC	58.89	59.70	60.05	61.04	61.27	62.21	63.41	64.17
ONTARIO	64.33	65.48	66.59	66.79	67.73	68.08	68.77	69.01
MANITOBA	61.73	63.09	63.72	64.62	65.07	65.45	66.19	66.48
SASKATCHEWAN	61.52	61.95	62.56	62.88	63.42	63.58	64.36	64.54
ALBERTA	67.03	68.18	69.34	70.33	71.72	71.47	71.85	71.80
BRITISH COLUMBIA	61.53	62.61	62.72	63.66	64.67	64.65	65.11	65.13

	1985	1986	1987	1988	1989	1990
CANADA	66.86	67.49	67.98	68.83	69.72	70.69
NEWFOUNDLAND	56.31	57.06	57.56	58.57	59.58	60.68
PRINCE EDWARD ISLAND	60.95	61.49	61.85	62.68	63.38	64.16
NOVA SCOTIA	60.65	61.33	62.08	63.07	64.01	65.15
NEW BRUNSWICK	58.92	59.50	60.05	60.84	61.58	62.46
QUEBEC	64.95	65.82	66.60	67.69	68.88	70.19
ONTARIO	69.39	69.88	70.19	70.85	71.58	72.38
MANITOBA	67.27	67.97	68.46	69.45	70.28	71.20
SASKATCHEWAN	64.99	65.67	66.16	66.69	67.50	68.33
ALBERTA	72.15	72.57	72.91	73.97	74.90	75.87
BRITISH COLUMBIA	65.54	66.04	66.36	67.06	67.72	68.42

LABOUR FORCE
(THOUSANDS)

	1977	1978	1979	1980	1981	1982	1983	1984
CANADA	10501	10882	11205	11523	11837	12094	12408	12632
NEWFOUNDLAND	191	199	207	213	219	226	234	239
PRINCE EDWARD ISLAND	48	50	53	54	54	55	56	57
NOVA SCOTIA	329	342	352	363	367	376	386	393
NEW BRUNSWICK	261	273	280	289	296	303	311	317
QUEBEC	2757	2827	2878	2960	2999	3062	3132	3177
ONTARIO	3995	4147	4288	4366	4482	4565	4669	4739
MANITOBA	456	471	478	486	492	499	509	515
SASKATCHEWAN	410	421	433	443	453	462	475	484
ALBERTA	909	960	1015	1072	1138	1179	1229	1272
BRITISH COLUMBIA	1144	1192	1222	1277	1337	1367	1408	1440

	1985	1986	1987	1988	1989	1990
CANADA	12894	13171	13409	13714	14022	14353
NEWFOUNDLAND	244	250	255	262	268	275
PRINCE EDWARD ISLAND	58	60	61	62	63	65
NOVA SCOTIA	401	410	418	428	439	450
NEW BRUNSWICK	324	331	337	345	353	362
QUEBEC	3223	3273	3313	3369	3429	3495
ONTARIO	4819	4907	4982	5074	5168	5272
MANITOBA	525	535	543	554	565	575
SASKATCHEWAN	495	507	517	528	540	552
ALBERTA	1322	1374	1423	1486	1546	1609
BRITISH COLUMBIA	1481	1524	1561	1607	1651	1697

Table 3.17 continued

EMPLOYMENT

	1977	1978	1979	1980	1981	1982	1983	1984
CANADA	9648	9971	10368	10655	10940	11077	11410	11733
NEWFOUNDLAND	161	166	175	185	188	193	198	204
PRINCE EDWARD ISLAND	44	45	47	48	48	49	50	51
NOVA SCOTIA	294	306	316	328	330	336	345	354
NEW BRUNSWICK	226	239	249	257	262	266	273	280
QUEBEC	2473	2520	2602	2667	2688	2736	2807	2875
ONTARIO	3714	3846	4008	4066	4186	4200	4318	4436
MANITOBA	429	440	452	459	463	468	480	490
SASKATCHEWAN	392	400	415	423	432	439	452	463
ALBERTA	869	915	976	1032	1094	1127	1178	1229
BRITISH COLUMBIA	1047	1093	1129	1191	1248	1264	1309	1351

	1985	1986	1987	1988	1989	1990
CANADA	12008	12282	12570	12879	13199	13535
NEWFOUNDLAND	209	215	220	226	232	238
PRINCE EDWARD ISLAND	52	53	55	56	57	58
NOVA SCOTIA	362	370	379	388	397	407
NEW BRUNSWICK	287	294	301	309	316	325
QUEBEC	2930	2984	3040	3101	3165	3233
ONTARIO	4530	4622	4718	4819	4923	5031
MANITOBA	499	509	518	529	540	552
SASKATCHEWAN	473	484	494	506	519	531
ALBERTA	1276	1323	1376	1434	1493	1555
BRITISH COLUMBIA	1389	1428	1469	1512	1557	1604

UNEMPLOYMENT RATE

	1977	1978	1979	1980	1981	1982	1983	1984
CANADA	8.12	8.38	7.47	7.53	7.58	8.41	8.04	7.12
NEWFOUNDLAND	15.76	16.51	15.46	13.48	14.06	14.86	15.04	14.49
PRINCE EDWARD ISLAND	9.66	10.10	11.24	11.05	11.53	11.32	11.05	10.33
NOVA SCOTIA	10.62	10.54	10.21	9.82	10.19	10.64	10.58	10.00
NEW BRUNSWICK	13.26	12.54	11.12	11.18	11.61	12.40	12.13	11.43
QUEBEC	10.31	10.89	9.59	9.89	10.37	10.64	10.37	9.49
ONTARIO	7.02	7.25	6.52	6.87	6.59	8.01	7.52	6.40
MANITOBA	5.94	6.56	5.37	5.53	5.98	6.24	5.74	4.83
SASKATCHEWAN	4.46	4.89	4.16	4.40	4.65	5.03	4.96	4.37
ALBERTA	4.46	4.70	3.85	3.72	3.80	4.37	4.13	3.38
BRITISH COLUMBIA	8.51	8.27	7.65	6.75	6.69	7.53	7.01	6.19

	1985	1986	1987	1988	1989	1990
CANADA	6.87	6.76	6.26	6.09	5.87	5.70
NEWFOUNDLAND	14.27	14.15	13.78	13.65	13.52	13.38
PRINCE EDWARD ISLAND	10.42	10.43	10.05	10.19	10.07	9.96
NOVA SCOTIA	9.85	9.84	9.42	9.41	9.49	9.56
NEW BRUNSWICK	11.25	11.18	10.59	10.45	10.46	10.37
QUEBEC	9.11	8.84	8.24	7.96	7.70	7.50
ONTARIO	6.01	5.80	5.29	5.03	4.75	4.59
MANITOBA	4.95	4.98	4.52	4.57	4.31	4.01
SASKATCHEWAN	4.44	4.57	4.39	4.05	3.91	3.79
ALBERTA	3.49	3.71	3.33	3.51	3.43	3.30
BRITISH COLUMBIA	6.21	6.29	5.88	5.86	5.69	5.49

NOTE: See note to Table 3.16.

Table 3.17 continued

PARTICIPATION RATE

(YEAR-TO-YEAR CHANGE)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
CANADA	0.45	1.04	0.75	0.65	0.69	0.45	0.82	0.35	0.54	0.62	0.49	0.85	0.89	0.97
NEWFOUNDLAND	1.31	0.98	0.96	0.42	0.12	0.94	0.97	0.50	0.71	0.75	0.50	1.01	1.01	1.10
PRINCE EDWARD ISLAND	0.16	0.92	1.39	0.39	-0.58	0.52	0.54	0.14	0.65	0.54	0.36	0.83	0.70	0.78
NOVA SCOTIA	0.03	1.15	0.59	0.93	-0.07	0.66	1.07	0.52	0.60	0.68	0.74	0.99	0.94	1.14
NEW BRUNSWICK	0.13	1.26	0.33	0.65	0.72	0.52	0.87	0.34	0.48	0.57	0.56	0.79	0.74	0.87
QUEBEC	0.53	0.82	0.35	0.99	0.22	0.94	1.21	0.76	0.78	0.87	0.78	1.09	1.19	1.31
ONTARIO	0.46	1.15	1.11	0.20	0.94	0.34	0.69	0.24	0.38	0.48	0.32	0.66	0.73	0.80
MANITOBA	0.47	1.36	0.63	0.90	0.45	0.38	0.74	0.29	0.79	0.70	0.49	0.98	0.84	0.92
SASKATCHEWAN	0.97	0.42	0.61	0.32	0.54	0.16	0.78	0.18	0.45	0.68	0.49	0.52	0.81	0.83
ALBERTA	0.07	1.15	1.17	0.99	1.38	-0.24	0.37	-0.05	0.35	0.42	0.34	1.06	0.92	0.98
BRITISH COLUMBIA	0.26	1.08	0.11	0.93	1.02	-0.03	0.46	0.02	0.41	0.50	0.32	0.70	0.66	0.69

LABOUR FORCE
(YEAR-OVER-YEAR PERCENTAGE CHANGE)

	1977	1978	1979	1980	1981	1982	1983	1984
CANADA	2.85	3.63	2.96	2.84	2.73	2.17	2.59	1.80
NEWFOUNDLAND	5.09	4.08	4.17	3.12	2.47	3.48	3.28	2.19
PRINCE EDWARD ISLAND	3.01	4.10	4.27	2.86	-0.09	2.07	2.11	1.42
NOVA SCOTIA	1.88	3.95	2.95	3.23	1.09	2.28	2.71	1.85
NEW BRUNSWICK	2.72	4.64	2.60	3.15	2.64	2.27	2.58	1.83
QUEBEC	2.49	2.55	1.78	2.86	1.33	2.07	2.28	1.44
ONTARIO	2.80	3.81	3.40	1.82	2.65	1.86	2.26	1.50
MANITOBA	2.16	3.22	1.48	1.63	1.29	1.44	1.91	1.23
SASKATCHEWAN	4.12	2.64	2.78	2.31	2.28	1.99	2.88	1.87
ALBERTA	4.33	5.62	5.65	5.62	6.16	3.62	4.25	3.48
BRITISH COLUMBIA	2.51	4.14	2.57	4.48	4.69	2.26	2.99	2.27

	1985	1986	1987	1988	1989	1990
CANADA	2.08	2.15	1.81	2.27	2.25	2.36
NEWFOUNDLAND	2.36	2.38	2.10	2.55	2.45	2.47
PRINCE EDWARD ISLAND	2.25	2.05	1.72	2.37	2.14	2.25
NOVA SCOTIA	2.14	2.22	1.85	2.39	2.54	2.61
NEW BRUNSWICK	2.20	2.26	1.75	2.34	2.54	2.52
QUEBEC	1.46	1.55	1.21	1.70	1.79	1.93
ONTARIO	1.70	1.81	1.53	1.85	1.85	2.01
MANITOBA	2.00	1.88	1.45	2.09	1.83	1.91
SASKATCHEWAN	2.27	2.41	2.01	2.06	2.28	2.30
ALBERTA	3.97	3.93	3.55	4.42	4.05	4.04
BRITISH COLUMBIA	2.87	2.88	2.41	2.93	2.75	2.78

Table 3.18
Ontario's personal income

	1977	1978	1979	1980	1981	1982	1983	1984
WAGES,SALARIES & SUPP. LAB. INCOME	48684	52986	58259	65066	73002	81178	90987	101143
MILITARY PAY & ALLOWANCES	469	472	477	512	568	626	677	710
OTHER INCOME	10831	12113	14280	16027	17663	17758	20244	22477
CURRENT TRANSFERS:								
GOV'T TRANSFERS TO PERSONS	6912	7842	8297	9943	11013	14515	16669	17861
OTHER TRANSFERS TO PERSONS	268	301	385	472	505	574	628	686
PERSONAL INCOME	67164	73714	81698	92020	102752	114650	129205	142877
DEDUCT: PERSONAL DIR. TAXES & OTH. TRANSFERS	12606	13251	14741	17250	19982	21791	25031	27363
PERSONAL DISPOSABLE INCOME	54558	60463	66957	74770	82770	92858	104174	115514
REAL PERSONAL DISPOSABLE INCOME (DEFLATED BY CPI)	33929	34511	35019	35491	34925	34859	35716	36413

	1985	1986	1987	1988	1989	1990
WAGES, SALARIES & SUPP. LAB. INCOME	111540	122963	135659	148686	162616	177227
MILITARY PAY & ALLOWANCES	742	783	825	856	885	916
OTHER INCOME	23912	26335	28730	32269	36345	42323
CURRENT TRANSFERS:						
GOV'T TRANSFERS TO PERSONS	19494	21462	23833	25720	27954	30852
OTHER TRANSFERS TO PERSONS	739	805	889	987	1095	1187
PERSONAL INCOME	156427	172348	189936	208518	228895	252505
DEDUCT: PERSONAL DIR. TAXES & OTH. TRANSFERS	29549	32478	35440	38182	41799	45959
PERSONAL DISPOSABLE INCOME	126878	139870	154497	170336	187096	206546
REAL PERSONAL DISPOSABLE INCOME (DEFLATED BY CPI)	36672	37212	37931	38976	39679	40599

NOTE: Nominal levels in millions of current dollars;
real income in millions of 1971 dollars.

Table 3.18 continued

YEAR-OVER-YEAR PERCENTAGE CHANGE

	1977	1978	1979	1980	1981	1982	1983	1984
WAGES,SALARIES & SUPP. LAB. INCOME	10.24	8.84	9.95	11.68	12.20	11.20	12.08	11.16
MILITARY PAY & ALLOWANCES	4.92	0.64	1.06	7.43	10.86	10.11	8.20	4.91
OTHER INCOME	10.09	11.84	17.89	12.23	10.21	0.54	14.00	11.03
CURRENT TRANSFERS:								
GOV'T TRANSFERS TO PERSONS	10.91	13.45	5.80	19.84	10.77	31.79	14.84	7.15
OTHER TRANSFERS TO PERSONS	-3.94	12.31	27.91	22.62	7.05	13.59	9.34	9.23
PERSONAL INCOME	10.18	9.75	10.83	12.63	11.66	11.58	12.70	10.58
DEDUCT: PERSONAL DIR. TAXES & OTH. TRANSFERS	6.53	5.12	11.24	17.02	15.84	9.05	14.86	9.32
PERSONAL DISPOSABLE INCOME	11.06	10.82	10.74	11.67	10.70	12.19	12.19	10.89
REAL PERSONAL DISPOSABLE INCOME (DEFLATED BY CPI)	2.84	1.71	1.47	1.35	-1.59	-0.19	2.46	1.95

	1985	1986	1987	1988	1989	1990
WAGES,SALARIES & SUPP. LAB. INCOME	10.28	10.24	10.33	9.60	9.37	8.98
MILITARY PAY & ALLOWANCES	4.50	5.52	5.44	3.75	3.39	3.42
OTHER INCOME	6.38	10.13	9.09	12.32	12.63	16.45
CURRENT TRANSFERS:						
GOV'T TRANSFERS TO PERSONS	9.14	10.10	11.05	7.92	8.68	10.37
OTHER TRANSFERS TO PERSONS	7.81	8.95	10.41	10.97	10.96	8.44
PERSONAL INCOME	9.48	10.18	10.21	9.78	9.77	10.31
DEDUCT: PERSONAL DIR. TAXES & OTH. TRANSFERS	7.99	9.91	9.12	7.74	9.47	9.95
PERSONAL DISPOSABLE INCOME	9.84	10.24	10.46	10.25	9.84	10.40
REAL PERSONAL DISPOSABLE INCOME (DEFLATED BY CPI)	0.71	1.47	1.93	2.75	1.81	2.32

Table 3.19
Ontario's real domestic product by industry

	1977	1978	1979	1980	1981	1982	1983	1984
1 AGRICULTURE, FISHING & TRAPPING	725	730	770	755	758	752	764	780
2 FORESTRY	102	107	112	109	112	111	116	120
3 MINERAL FUEL MINES & WELLS	2	2	3	3	3	3	3	3
4 OTHER MINES & QUARRIES	508	369	354	385	371	345	341	334
5 FOOD, FEED, BEVERAGES & TOBACCO	1416	1363	1407	1447	1457	1452	1470	1502
6 TEXTILES & CLOTHING	600	621	669	664	668	651	659	681
7 WOOD & FURNITURE	364	364	358	351	353	341	349	353
8 PAPER, PRINTING & ALLIED INDUSTRIES	1190	1251	1312	1337	1348	1325	1355	1378
9 PRIMARY METAL & METAL FABRICATING	2315	2331	2394	2440	2446	2370	2456	2548
10 MOTOR VEHICLES & PARTS	1804	1873	1756	1548	1645	1624	1689	1782
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	1217	1331	1448	1299	1279	1233	1310	1412
12 ELECTRICAL PRODUCTS	1048	1085	1169	1158	1138	1083	1126	1179
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	1543	1653	1753	1694	1725	1721	1798	1896
14 NON-METALLIC MINERAL PRODUCTS	418	429	426	392	399	387	403	420
15 OTHER MANUFACTURING INDUSTRIES	604	634	659	633	609	576	589	615
TOTAL MANUFACTURING	12519	12936	13350	12964	13067	12764	13203	13766
16 CONSTRUCTION	2065	1975	1866	1958	2034	2000	2074	2140
17 ELECTRIC POWER, WATER & GAS UTILITIES	1232	1274	1330	1369	1427	1463	1535	1616
TOTAL GOODS-PRODUCING INDUSTRIES	17153	17394	17785	17542	17772	17438	18037	18760
18 TRANSPORTATION & STORAGE	2133	2208	2263	2228	2243	2227	2286	2354
19 COMMUNICATION	1626	1743	1832	1928	2056	2151	2316	2500
20 TRADE	5178	5327	5344	5296	5412	5371	5543	5713
21 FINANCE, INSURANCE & REAL ESTATE	6087	6310	6416	6730	6964	7059	7349	7676
22 OTHER SERVICE INDUSTRIES	6422	6863	6834	6978	7243	7419	7765	8140
TOTAL SERVICE INDUSTRIES	21446	22451	22689	23159	23918	24227	25260	26383
23 GOVERNMENT SECTOR	5077	4751	4656	4390	4326	4349	4424	4497
TOTAL: ALL SECTORS (GROSS PROV. PRODUCT AT FACTOR COST - REAL)	43676	44595	45130	45091	46016	46015	47720	49640

	1985	1986	1987	1988	1989	1990
1 AGRICULTURE,FISHING & TRAPPING	790	808	817	830	840	848
2 FORESTRY	124	129	132	136	140	143
3 MINERAL FUEL MINES & WELLS	3	3	3	3	3	3
4 OTHER MINES & QUARRIES	324	315	303	293	280	266
5 FOOD,FEED,BEVERAGES & TOBACCO	1524	1556	1581	1610	1635	1658
6 TEXTILES & CLOTHING	678	674	665	664	665	663
7 WOOD & FURNITURE	355	360	363	365	365	364
8 PAPER,PRINTING & ALLIED INDUSTRIES	1391	1418	1425	1442	1450	1458
9 PRIMARY METAL & METAL FABRICATING	2589	2638	2662	2703	2721	2727
10 MOTOR VEHICLES & PARTS	1837	1830	1844	1817	1767	1700
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	1457	1520	1570	1645	1705	1752
12 ELECTRICAL PRODUCTS	1190	1215	1238	1271	1291	1307
13 CHEMICAL,RUBBER & PETROLEUM PRODUCTS	1951	2018	2069	2140	2199	2254
14 NON-METALLIC MINERAL PRODUCTS	431	439	445	454	460	464
15 OTHER MANUFACTURING INDUSTRIES	605	605	597	601	603	603
TOTAL MANUFACTURING	14010	14273	14460	14713	14861	14950
16 CONSTRUCTION	2207	2253	2310	2362	2398	2436
17 ELECTRIC POWER,WATER & GAS UTILITIES	1688	1772	1859	1955	2046	2147
TOTAL GOODS-PRODUCING INDUSTRIES	19145	19552	19884	20292	20567	20792
18 TRANSPORTATION & STORAGE	2397	2450	2513	2576	2631	2709
19 COMMUNICATION	2686	2895	3114	3352	3599	3885
20 TRADE	5844	6030	6222	6412	6573	6751
21 FINANCE,INSURANCE & REAL ESTATE	8008	8345	8687	9037	9396	9802
22 OTHER SERVICE INDUSTRIES	8538	8977	9427	9884	10347	10922
TOTAL SERVICE INDUSTRIES	27473	28696	29963	31261	32546	34069
23 GOVERNMENT SECTOR	4569	4650	4746	4841	4924	5013
TOTAL: ALL SECTORS (GROSS PROV. PRODUCT AT FACTOR COST - REAL)	51187	52898	54593	56394	58037	59874

NOTE: Levels in millions of 1971 dollars.

Table 3.19 continued

YEAR-OVER-YEAR PERCENTAGE CHANGE

	1977	1978	1979	1980	1981	1982	1983	1984
1 AGRICULTURE, FISHING & TRAPPING	4.46	0.75	5.40	-1.90	0.41	-0.87	1.72	2.02
2 FORESTRY	11.41	4.16	5.23	-2.78	2.70	-0.63	4.55	3.54
3 MINERAL FUEL MINES & WELLS	0.0	0.08	10.45	-2.76	1.62	2.65	3.12	0.04
4 OTHER MINES & QUARRIES	-0.94	-27.31	-4.06	8.79	-3.71	-6.86	-1.18	-2.06
5 FOOD, FEED, BEVERAGES & TOBACCO	-0.03	-3.73	3.26	2.83	0.66	-0.34	1.25	2.20
6 TEXTILES & CLOTHING	6.20	3.59	7.63	-0.76	0.60	-2.52	1.30	3.29
7 WOOD & FURNITURE	-4.50	-0.15	-1.67	-1.98	0.62	-3.25	2.38	0.98
8 PAPER, PRINTING & ALLIED INDUSTRIES	6.99	5.14	4.88	1.87	0.86	-1.71	2.25	1.73
9 PRIMARY METAL & METAL FABRICATING	-0.90	0.67	2.70	1.95	0.24	-3.12	3.62	3.77
10 MOTOR VEHICLES & PARTS	5.90	3.84	-6.29	-11.83	6.26	-1.26	3.97	5.55
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	0.32	9.38	8.72	-10.25	-1.55	-3.61	6.26	7.78
12 ELECTRICAL PRODUCTS	-5.49	3.57	7.70	-0.93	-1.75	-4.81	3.97	4.67
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	5.39	7.11	6.07	-3.37	1.83	-0.25	4.46	5.46
14 NON-METALLIC MINERAL PRODUCTS	-4.06	2.71	-0.78	-7.81	1.61	-2.80	3.93	4.39
15 OTHER MANUFACTURING INDUSTRIES	-2.86	4.98	4.06	-3.93	-3.78	-5.46	2.19	4.37
TOTAL MANUFACTURING	1.30	3.33	3.20	-2.89	0.79	-2.32	3.44	4.27
16 CONSTRUCTION	-4.95	-4.34	-5.52	4.90	3.88	-1.66	3.67	3.20
17 ELECTRIC POWER, WATER & GAS UTILITIES	5.10	3.42	4.39	2.91	4.29	2.51	4.89	5.31
TOTAL GOODS-PRODUCING INDUSTRIES	0.89	1.40	2.25	-1.37	1.31	-1.88	3.43	4.01
18 TRANSPORTATION & STORAGE	5.95	3.53	2.51	-1.56	0.69	-0.71	2.64	2.96
19 COMMUNICATION	11.14	7.19	5.10	5.21	6.67	4.62	7.66	7.96
20 TRADE	0.81	2.89	0.32	-0.90	2.18	-0.76	3.20	3.07
21 FINANCE, INSURANCE & REAL ESTATE	5.96	3.67	1.67	4.89	3.48	1.37	4.12	4.44
22 OTHER SERVICE INDUSTRIES	5.88	6.85	-0.42	2.11	3.80	2.44	4.67	4.82
TOTAL SERVICE INDUSTRIES	5.01	4.69	1.06	2.07	3.28	1.30	4.26	4.45
23 GOVERNMENT SECTOR	-1.24	-6.42	-1.99	-5.71	-1.45	0.53	1.72	1.66
TOTAL: ALL SECTORS (GROSS PROV. PRODUCT AT FACTOR COST - REAL)	2.61	2.11	1.20	-0.09	2.05	-0.00	3.71	4.02

	1985	1986	1987	1988	1989	1990
1 AGRICULTURE, FISHING & TRAPPING	1.31	2.23	1.16	1.60	1.14	0.96
2 FORESTRY	2.90	3.86	2.77	3.13	2.35	2.29
3 MINERAL FUEL MINES & WELLS	-3.85	-0.27	2.24	7.25	1.30	-0.38
4 OTHER MINES & QUARRIES	-3.22	-2.55	-3.96	-3.33	-4.42	-4.88
5 FOOD, FEED, BEVERAGES & TOBACCO	1.46	2.09	1.60	1.83	1.54	1.44
6 TEXTILES & CLOTHING	-0.43	-0.53	-1.41	-0.09	0.05	-0.27
7 WOOD & FURNITURE	0.58	1.50	0.65	0.76	-0.12	-0.15
8 PAPER, PRINTING & ALLIED INDUSTRIES	0.94	1.87	0.56	1.17	0.57	0.52
9 PRIMARY METAL & METAL FABRICATING	1.62	1.86	0.91	1.54	0.68	0.20
10 MOTOR VEHICLES & PARTS	3.07	-0.38	0.77	-1.47	-2.76	-3.77
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	3.23	4.29	3.32	4.78	3.63	2.74
12 ELECTRICAL PRODUCTS	0.95	2.08	1.91	2.64	1.62	1.20
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	2.93	3.42	2.54	3.42	2.73	2.50
14 NON-METALLIC MINERAL PRODUCTS	2.49	1.82	1.49	1.97	1.26	0.95
15 OTHER MANUFACTURING INDUSTRIES	-1.48	-0.04	-1.38	0.76	0.33	-0.03
TOTAL MANUFACTURING	1.77	1.87	1.31	1.75	1.00	0.60
16 CONSTRUCTION	3.12	2.10	2.52	2.24	1.55	1.55
17 ELECTRIC POWER, WATER & GAS UTILITIES	4.42	4.98	4.91	5.16	4.64	4.98
TOTAL GOODS-PRODUCING INDUSTRIES	2.05	2.13	1.69	2.05	1.35	1.10
18 TRANSPORTATION & STORAGE	1.83	2.20	2.57	2.53	2.12	2.98
19 COMMUNICATION	7.45	7.75	7.58	7.63	7.39	7.93
20 TRADE	2.29	3.18	3.19	3.06	2.50	2.71
21 FINANCE, INSURANCE & REAL ESTATE	4.33	4.20	4.11	4.02	3.98	4.32
22 OTHER SERVICE INDUSTRIES	4.89	5.15	5.01	4.85	4.68	5.56
TOTAL SERVICE INDUSTRIES	4.13	4.45	4.42	4.33	4.11	4.68
23 GOVERNMENT SECTOR	1.59	1.77	2.07	1.99	1.72	1.80
TOTAL: ALL SECTORS (GROSS PROV. PRODUCT AT FACTOR COST - REAL)	3.12	3.34	3.20	3.30	2.91	3.17

Table 3.20
Ontario's employment by industry

	1977	1978	1979	1980	1981	1982	1983	1984
1 AGRICULTURE, FISHING & TRAPPING	110	112	124	120	118	114	111	108
2 FORESTRY	10	11	12	11	12	12	12	12
3 MINERAL FUEL MINES & WELLS	0	0	0	0	0	0	0	0
4 OTHER MINES & QUARRIES	31	27	25	29	29	28	29	29
5 FOOD, FEED, BEVERAGES & TOBACCO	112	109	115	120	123	123	124	125
6 TEXTILES & CLOTHING	73	75	81	82	83	80	79	80
7 WOOD & FURNITURE	36	37	39	38	38	36	36	36
8 PAPER, PRINTING & ALLIED INDUSTRIES	92	93	99	102	104	102	104	105
9 PRIMARY METAL & METAL FABRICATING	170	168	181	188	190	185	190	195
10 MOTOR VEHICLES & PARTS	103	103	103	87	94	94	98	104
11 MACHINERY & OTH. TRANSPORTATION EQUIP	95	106	123	128	125	120	122	126
12 ELECTRICAL PRODUCTS	89	92	99	102	100	94	96	99
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	82	86	92	94	96	95	97	100
14 NON-METALLIC MINERAL PRODUCTS	27	27	29	29	30	29	30	31
15 OTHER MANUFACTURING INDUSTRIES	70	70	76	76	73	68	69	71
TOTAL MANUFACTURING	948	967	1036	1045	1055	1027	1046	1071
16 CONSTRUCTION	183	179	172	170	182	182	192	200
17 ELECTRIC POWER, WATER & GAS UTILITIES	33	36	38	37	39	39	40	42
TOTAL GOODS-PRODUCING INDUSTRIES	1315	1332	1408	1412	1435	1402	1430	1462
18 TRANSPORTATION & STORAGE	152	162	169	167	168	166	167	169
19 COMMUNICATION	95	100	104	103	108	109	114	118
20 TRADE	623	650	671	678	705	706	726	744
21 FINANCE, INSURANCE & REAL ESTATE	225	234	238	261	273	278	288	297
22 OTHER SERVICE INDUSTRIES	847	919	963	1016	1093	1131	1178	1225
TOTAL SERVICE INDUSTRIES	1941	2065	2145	2224	2347	2390	2473	2552
23 GOVERNMENT SECTOR	458	449	455	430	404	408	414	421
TOTAL: ALL SECTORS	3714	3846	4008	4066	4186	4200	4318	4436

	1985	1986	1987	1988	1989	1990
1 AGRICULTURE, FISHING & TRAPPING	105	102	99	96	93	90
2 FORESTRY	13	13	13	14	14	14
3 MINERAL FUEL MINES & WELLS	0	0	0	0	0	0
4 OTHER MINES & QUARRIES	29	29	29	29	29	28
5 FOOD, FEED, BEVERAGES & TOBACCO	126	127	128	129	130	131
6 TEXTILES & CLOTHING	78	75	72	70	69	67
7 WOOD & FURNITURE	35	35	35	34	33	33
8 PAPER, PRINTING & ALLIED INDUSTRIES	104	105	104	104	104	103
9 PRIMARY METAL & METAL FABRICATING	196	197	197	197	197	196
10 MOTOR VEHICLES & PARTS	107	106	107	105	102	98
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	126	126	125	126	126	126
12 ELECTRICAL PRODUCTS	98	98	97	98	97	97
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	101	102	102	103	104	104
14 NON-METALLIC MINERAL PRODUCTS	31	32	32	32	32	32
15 OTHER MANUFACTURING INDUSTRIES	69	67	65	64	63	62
TOTAL MANUFACTURING	1072	1070	1064	1062	1058	1047
16 CONSTRUCTION	208	214	222	230	238	245
17 ELECTRIC POWER, WATER & GAS UTILITIES	43	44	45	46	47	48
TOTAL GOODS-PRODUCING INDUSTRIES	1470	1473	1473	1477	1479	1472
18 TRANSPORTATION & STORAGE	168	168	169	169	169	171
19 COMMUNICATION	122	126	130	134	138	143
20 TRADE	758	775	794	812	829	846
21 FINANCE, INSURANCE & REAL ESTATE	308	317	326	335	346	357
22 OTHER SERVICE INDUSTRIES	1277	1328	1384	1440	1502	1574
TOTAL SERVICE INDUSTRIES	2632	2713	2802	2890	2985	3092
23 GOVERNMENT SECTOR	428	436	444	451	459	466
TOTAL: ALL SECTORS	4530	4622	4718	4819	4923	5031

NOTE: Levels in thousands.

Table 3.20 continued

YEAR-OVER-YEAR PERCENTAGE CHANGE

	1977	1978	1979	1980	1981	1982	1983	1984
1 AGRICULTURE, FISHING & TRAPPING	0.41	1.73	10.78	-3.33	-1.44	-3.84	-2.43	-2.52
2 FORESTRY	11.03	4.43	7.59	-4.32	4.29	0.21	4.31	2.89
3 MINERAL FUEL MINES & WELLS	0.0	14.44	13.56	8.90	2.84	3.39	2.54	-0.40
4 OTHER MINES & QUARRIES	-4.77	-11.51	-7.48	14.61	0.94	-2.79	2.03	0.85
5 FOOD, FEED, BEVERAGES & TOBACCO	0.37	-2.52	5.97	4.48	2.02	0.04	0.67	1.23
6 TEXTILES & CLOTHING	2.25	3.23	7.21	1.55	0.97	-3.69	-0.69	0.81
7 WOOD & FURNITURE	-8.04	0.76	6.69	-3.47	0.16	-3.85	0.37	-1.28
8 PAPER, PRINTING & ALLIED INDUSTRIES	6.07	1.66	6.24	2.89	2.11	-1.65	1.47	0.54
9 PRIMARY METAL & METAL FABRICATING	-3.80	-0.95	7.49	3.98	1.22	-2.89	2.78	2.60
10 MOTOR VEHICLES & PARTS	5.95	0.46	-0.36	-15.86	8.23	0.20	4.38	5.67
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	-4.95	11.87	15.73	3.88	-2.02	-4.32	2.06	2.95
12 ELECTRICAL PRODUCTS	-7.07	3.35	7.54	3.36	-1.86	-5.65	2.11	2.53
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	1.99	4.35	7.19	2.49	1.83	-0.97	2.47	3.03
14 NON-METALLIC MINERAL PRODUCTS	-3.94	0.38	6.75	-0.40	2.80	-2.09	3.07	3.19
15 OTHER MANUFACTURING INDUSTRIES	-5.27	1.04	7.76	-0.13	-3.62	-6.29	0.96	2.87
TOTAL MANUFACTURING	-1.24	1.99	7.19	0.86	0.97	-2.72	1.90	2.36
16 CONSTRUCTION	-3.95	-1.74	-3.89	-1.65	7.18	0.27	5.09	4.29
17 ELECTRIC POWER, WATER & GAS UTILITIES	2.31	7.70	6.17	-2.70	4.43	1.53	2.97	2.99
TOTAL GOODS-PRODUCING INDUSTRIES	-1.40	1.30	5.68	0.29	1.63	-2.30	2.02	2.23
18 TRANSPORTATION & STORAGE	0.17	7.19	4.24	-1.55	0.91	-1.36	0.80	0.73
19 COMMUNICATION	4.27	4.81	4.60	-1.41	4.72	1.74	3.77	3.67
20 TRADE	2.47	4.37	3.29	1.03	4.00	0.08	2.91	2.42
21 FINANCE, INSURANCE & REAL ESTATE	7.52	4.17	1.48	9.66	4.81	1.73	3.44	3.37
22 OTHER SERVICE INDUSTRIES	7.46	8.47	4.82	5.49	7.60	3.47	4.18	3.95
TOTAL SERVICE INDUSTRIES	5.07	6.38	3.90	3.66	5.54	1.82	3.47	3.20
23 GOVERNMENT SECTOR	-1.45	-1.94	1.29	-5.45	-5.95	0.81	1.61	1.65
TOTAL: ALL SECTORS	1.87	3.55	4.21	1.45	2.95	0.33	2.80	2.73

	1985	1986	1987	1988	1989	1990
1 AGRICULTURE,FISHING & TRAPPING	-2.93	-2.52	-3.29	-3.01	-2.99	-3.43
2 FORESTRY	2.45	3.00	2.12	2.40	2.05	1.67
3 MINERAL FUEL MINES & WELLS	-3.54	-0.90	1.41	5.74	0.95	-0.65
4 OTHER MINES & QUARRIES	-0.06	0.27	-0.86	-0.25	-0.83	-1.51
5 FOOD,FEED,BEVERAGES & TOBACCO	0.71	0.91	0.58	0.71	0.83	0.43
6 TEXTILES & CLOTHING	-2.61	-3.14	-3.87	-2.90	-2.21	-3.04
7 WOOD & FURNITURE	-1.47	-0.99	-1.55	-1.49	-1.89	-2.20
8 PAPER,PRINTING & ALLIED INDUSTRIES	-0.07	0.48	-0.69	-0.15	-0.36	-0.73
9 PRIMARY METAL & METAL FABRICATING	0.68	0.51	-0.20	0.31	-0.04	-0.79
10 MOTOR VEHICLES & PARTS	3.29	-0.75	0.62	-1.90	-2.86	-4.05
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	-0.22	0.12	-0.41	0.55	0.21	-0.51
12 ELECTRICAL PRODUCTS	-1.02	-0.33	-0.27	0.27	-0.18	-0.81
13 CHEMICAL,RUBBER & PETROLEUM PRODUCTS	0.83	0.89	0.25	0.93	0.75	0.18
14 NON-METALLIC MINERAL PRODUCTS	1.63	0.62	0.64	1.08	0.89	0.25
15 OTHER MANUFACTURING INDUSTRIES	-3.31	-2.15	-3.47	-1.62	-1.32	-2.36
TOTAL MANUFACTURING	0.06	-0.14	-0.55	-0.20	-0.40	-1.07
16 CONSTRUCTION	4.36	2.87	3.72	3.59	3.23	2.89
17 ELECTRIC POWER,WATER & GAS UTILITIES	2.30	2.42	2.54	2.76	2.59	2.66
TOTAL GOODS-PRODUCING INDUSTRIES	0.51	0.23	-0.01	0.30	0.10	-0.45
18 TRANSPORTATION & STORAGE	-0.13	-0.20	0.33	0.25	0.22	0.79
19 COMMUNICATION	3.33	3.19	3.22	3.21	3.33	3.62
20 TRADE	1.86	2.27	2.47	2.28	2.14	2.05
21 FINANCE,INSURANCE & REAL ESTATE	3.48	2.91	2.99	2.84	3.19	3.28
22 OTHER SERVICE INDUSTRIES	4.23	4.05	4.18	4.10	4.29	4.80
TOTAL SERVICE INDUSTRIES	3.12	3.09	3.27	3.16	3.28	3.58
23 GOVERNMENT SECTOR	1.72	1.78	1.77	1.71	1.68	1.66
TOTAL: ALL SECTORS	2.12	2.04	2.08	2.13	2.15	2.19

4
Altering some key assumptions

The reliability of the base-case projections presented in Chapters 2 and 3 clearly depends in large part on our assumptions for the models' exogenous variables. Any variation from the assumed path of one or more of them will change, to some degree, the projected path of the endogenous variables. Thus, the accuracy of the assumptions is important. But, since no set of assumptions ever proves completely accurate, what is even more important is the sensitivity of the projections to variations in them.

One of the main purposes of this chapter, therefore, is to present a group of sensitivity tests in which we change one exogenous variable at a time and examine the impact on a set of summary variables. The new projected paths give some insight into the mechanics of the FOCUS and PRISM models as well as some idea of the importance of a particular exogenous variable assumption. This procedure is not, however, merely an academic exercise; it is a way of asking what effects changes in government policy would have on the Canadian - and hence the Ontario - economy.

The contributions to the policy debate flow from our choice of exogenous variables to test. From the lengthy list of possibilities (FOCUS alone contains more than two hundred exogenous variables and PRISM about seven hundred), we selected seven alternatives. The set is small, but it includes key assumptions. Moreover, five of the alternative cases are direct changes in the base case's assumptions about government policy; the other two alter assumptions about the economic environment, but both necessitate a policy response (the Bank of Canada must decide on an exchange-rate policy).[1]

[1] Conveniently for (and perhaps a cause of) our strong emphasis on govern-

Thus, this chapter presents both tests of the sensitivity of the model and an examination of policy options by discussing projections of the following alternative assumptions:

- An increase in government expenditures on goods and services.
- An increase in personal income taxes.
- An increase in the existing investment tax credits.
- A wage subsidy program.
- An increase in the target growth rate of the money supply.
- A large, one-time, exogenous outflow of capital.
- An increase in interest rates in the United States.

Following the previous pattern, summary tables accompany the relevant parts of the text; detailed results (for all Canada and for Ontario) are grouped at the end of the chapter.

THE ALTERNATIVE CASES

Two points are worth mentioning before examining the results of these experiments. All the alternative cases, unless noted to the contrary, assume that the Bank of Canada follows a flexible exchange rate policy and continues its policy of gradually reducing the growth rate of the money supply. (This assumption changes only in the final test, which examines the sensitivity of the models to alternative exchange-rate and monetary policies.) In addition, the models require an implicit assumption about the degree of international capital mobility.[2] In these simulations, we assume that long-term capital borrowings abroad are somewhat offset by short-term capital outflows that is, a less-than-perfectly-mobile capital flow.[3] All other assumptions are the same as those in the base-case projections.

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ment policy variables, FOCUS has evolved primarily as a policy simulation model.

[2] In FOCUS, it is relatively simple to change from an assumption of a very mobile capital flow assumption to one of a restricted capital flow. Our experiments retained the coefficient estimated by ordinary least squares procedure, which can best be described as an assumption of a semimobile capital flow assumption.

[3] This assumption effectively dampens the exchange-rate response necessary to clear the foreign exchange market under a flexible exchange rate. In the simulations in which exchange-rate movements play an important role, increased capital mobility leads to stronger effects.

Finally, notice that all the alternative simulations begin in the first quarter of 1982. Since the base-case projection has the economy substantially below potential output during 1982 and 1983, an appropriately designed policy should, therefore, have initial effects that are larger for real output than for prices.

Increased government expenditure

As an example of a demand-side policy, we assume a rise in real government expenditures on goods and services, increasing them by $500 million over the base-case projection for each year from 1982 to 1990. As illustrated in Table 4.1 (and in greater detail in Tables 4.10 through 4.12 at the end of the chapter), the results demonstrate the effects of a traditional expansionist fiscal policy.[4]

The increased government expenditure results in both real and nominal effects, which, as one would expect, are not identical. The impact on real GNP is greatest in the second and third years of the program; real output then rises by about $600 million, for a multiplier of just over 1.2 at the peak. The value for the multiplier is low because two types of crowding out occur: in the financial markets because interest rates rise, and in the market for real goods and services because prices are bid up.

The impact on prices grows stronger throughout the simulation period. In the short run, the demand pressures that result from the policy are the major cause of the higher price level. In the longer run, however, demand declines relative to the base case, but prices continue to rise, largely because of a fall in the exchange rate.[5] As the value of the Canadian dollar falls, the domestic prices of foreign goods rise. By 1987, when real GNP is lower than that of the base projection, the foreign-price effect is strong enough to keep domestic prices higher than they are in the base case projection.

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[4] For a more thorough analysis of the impacts of increased government expenditures on goods and services as simulated in the FOCUS model, see Institute for Policy Analysis (1982). A theoretical discussion of the impacts of increased government expenditures can be found in Turnovsky (1977).

[5] Recall that this study defines the exchange rate as $US/$Canadian, so that a fall in the exchange rate is equivalent to a depreciation of the Canadian dollar.

TABLE 4.1
Effect on Canada and Ontario of increased government expenditures
(yearly averages - changes from base case)

	1982-4	1985-7	1988-90
Canada			
GNP (change in millions of 1971$)	522.6	29.0	-232.4
GNP price deflator (1971 = 1.00)	0.03	0.07	0.15
Real net foreign trade (millions of 1971$; change in exports less change in imports)	-281.6	-564.4	-851.4
Ontario			
GDP (at factor cost) (change in exports less change in imports)	214.5	53.8	16.9
Employment (change in thousands)	19.6	14.2	15.7
Unemployment rate (change in rate)	-0.33	-0.24	-0.25
Real domestic product - goods (change in millions of 1971$)	72.5	-29.0	-55.1

On the labour front, the increased government expenditures successfully reduce the unemployment rate and increase employment throughout the period, indicating that although GNP declines, the domestic component of output remains relatively high. The increased demand for labour results in higher average annual wages and salaries, a larger labour force, and a greater level of personal income.

As shown in Tables 4.1 and 4.10, the aggregate Ontario results are similar to the national ones in magnitude and timing. The growth rate of the real provincial product rises in the first years of the policy, declines for a time, then rises again in 1989 and 1990. The Ontario unemployment rate declines throughout the simulation period more than the national rate does. The principal reason for the difference is that Ontario has a disproportionate amount of the expenditure categories that increase the most or decrease the least. The service sector records relatively high growth rates throughout the period, but the goods-producing industries initially have higher, then relatively lower growth rates.

An increase in personal income taxes

To contrast the effects of an expansionary policy of increased government spending, we examine the impact of a policy of contraction: increased personal income taxes. The assumption is that the government partially eliminates the federal tax reduction, with the objective of raising an extra $2000 million per year in personal taxes.[6] An additional assumption is that the increase in taxes is not directly passed through to wage demands; that is, labour bargains for before-tax wage rates as opposed to maintaining a particular level of disposable income.[7]

The results, shown in Tables 4.2 and 4.13 through 4.15, illustrate the traditional effects of a fiscal policy of contraction. Initially, both real GNP and prices decline relative to the base-case projections. While the price decline continues throughout the entire period, the impact on real GNP reverses itself five years after the policy change comes into effect. The forces behind this phenomenon are similar to those that reversed the effect of increased government expenditures. First, the tax increase reduces the federal government deficit, resulting in smaller borrowing requirements. This decrease makes more financial resources available to the private sector and puts downward pressure on the rate of interest. Eventually, in 1986, the lower interest rates induce higher investment expenditures. Meanwhile, the exchange rate initially appreciates, reducing real exports. However, once the downward price movement is sufficiently strong, its impact on exports is positive. This occurs in 1985, but not until 1987 are the two effects sufficient to dominate the negative effect the tax increase has on consumption expenditures.

The personal tax rise's impact on Ontario reflects the varying composition of the expenditure movements at the national level. The goods-producing industries are initially affected more severely than the service industries, reflecting the relative declines in export, investment, and consumption expenditures. During the last half of the simulation period, when exports and investments are high and consumption expenditures low, the service sector is significantly more adversely affected than the goods sector. Not surprisingly though, the provincial real GDP follows approximately the same pattern as the national GNP.

[6] In fact, the November 1981 federal budget included a partial cancellation of the federal income tax reduction, although the amount to be collected is not as great. A brief discussion of the effects of a rise in personal income taxes can be found in Blinder and Solow (1974).

[7] See Hartle, D.G. et al. 'Stagflation Consequences of the Canadian Tax/Transfer System' O.E.C. Conference Paper 1981, and Auld and Wilton (1980).

TABLE 4.2
Effect on Canada and Ontario of increased personal income taxes
(yearly averages - changes from base case)

	1982-4	1985-7	1988-90
Canada			
GNP (change in millions of 1971$)	-577.5	-121.0	581.3
GNP price deflator (1971 = 1.00)	-0.03	-0.08	-0.15
Real net foreign trade (millions of 1971$; change in exports less change in imports)	-160.9	522.0	805.1
Investment (change in millions of 1971$)	-118.1	170.1	469.5
Ontario			
GDP (at factor cost) (change in millions of 1971$)	-233.5	-80.4	135.5
Employment (change in thousands)	-19.1	-17.6	-0.7
Unemployment rate (change in rate)	0.32	0.29	0.09
Real domestic product - goods (change in millions of 1971$)	-104.4	-3.7	128.9

The number of persons employed in Ontario declines, as does participation in the labour force. In every year except 1988, the fall in the number of persons employed is greater than the decline in the labour force, so the unemployment rate rises. Lower total employment combines with higher personal income taxes to result in a real personal disposable income that is lower per capita than the base case's in each year of the simulation.

An investment tax credit

For our third alternative case, we simulated a doubling of existing investment tax credits,[8] which is assumed to remain in place throughout the period. In effect, the policy raises the real after-tax rate of return to investment in machinery and equipment and in nonresidential structures.

As shown in Table 4.3 (and detailed in Table 4.16 at the end of the chapter), the national macroeconomic effects are of two types. Immediately following the policy change, up to 1985, an aggregate-demand effect dominates, as both prices and output rise. From 1986 on, however, increases in aggregate supply are stronger, resulting in downward pressure on the price level and in increased real output. This outcome is caused by two factors directly related to the investment tax credit. The first is the additional investment it induces, which leads to a larger capital stock in the future and, therefore, a larger potential output. The second is a substantial rise in after-tax corporate profits (relative to the base case), which provides an incentive for firms to achieve the larger potential output, increasing aggregate supply with beneficial effects on prices and real output.

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[8] See Fisher (1981) for a discussion of an investment tax credit proposal. In a paper prepared for the Canadian Securities Industry Tax Committee, Bossons and Jump (1981), using the FOCUS model, examine the effects of indexing capital cost allowances. The results they report are similar to those of simulation of doubling the investment tax credit.

The major components of total expenditures change in varying proportions. It is hardly surprising that business investment undergoes the largest percentage increase during the first years of the period. By 1986, however, the change in exports is larger. They rise, initially because the value of the Canadian dollar falls, and from 1986 on, because a relative decline in price levels makes Canadian goods more competitive in world markets, reinforcing the stimulus to exports. Consumption expenditure increases throughout the simulation period.

Ontario's economy fares better as a result of doubling the investment tax credit than do the other provinces' (see Table 4.3 and Tables 4.17 and 4.18 at the end of the chapter). The province retains a large proportion of the export- and investment-oriented industries; since first nonresidential investments and then export goods rise, its economy receives significant stimuli throughout the period. As for industrial detail, capital-intensive industries outdo labour-intensive because the cost of capital has fallen; therefore, the goods-producing industries undergo a larger expansion than the service industries.

The policy alternative of increasing the investment tax credit has the attractive advantage of improving productivity performance. In Ontario, GDP at factor cost per employee rises by approximately 0.25 per cent in each year, largely as a result of the newer and larger working capital stock. Moreover, employment increases more than the labour force does, so the unemployment rate falls.

The effects of a wage subsidy scheme

This simulation assumes a wage subsidy program designed so that the federal

TABLE 4.3
Effect on Canada and Ontario of doubling investment tax credits
(yearly averages - changes from base case)

	1982-4	1985-7	1988-90
Canada			
GNP (change in millions of 1971$)	390.9	494.0	706.2
GNP price deflator (1971 = 1.00)	0.0	-0.01	-0.01
Real net foreign trade (millions of 1971$: change in exports less change in imports)	91.8	111.7	153.7
Investment (change in millions of 1971$)	132.4	160.3	280.1
Ontario			
GDP (at factor cost) (change in millions of 1971$)	188.4	228.6	311.1
Employment (change in thousands)	8.2	9.7	12.0
Real domestic product - goods (change in millions of 1971$)	108.5	124.8	159.9
GDP (at factor cost) per employee (change in thousands of 1971$)	0.025	0.026	0.034

government pays slightly more than 0.5 per cent of the total private wage bill.[9] Introducing the subsidy causes employers' cost per worker to decline; the most direct result is an increase in the demand for labour, and both the number of persons employed and the average wage rise. Other national results are shown in Table 4.4 and detailed in Table 4.19. Despite the higher average wage, the policy's effect on the CPI and the GNP deflator is only marginal during the years immediately following its introduction because the subsidy decreases the wage rate paid by employers and thus lowers the selling prices of domestic products. Relatively lower prices make Canadian goods more competitive than foreign goods in both the domestic and the world markets for a time, but the advantage gained in the latter dissipates by 1985, when the initial improvement in the terms of trade is offset by a rising implicit price deflator for GNP. Therefore, real exports decline relative to the base case during the final four years of the simulation. Consumption expenditures, on the other hand, increase continuously, with the largest

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[9] There are several good papers discussing wage subsidies in Haverman and Palmer (1982).

TABLE 4.4
Effect on Canada and Ontario of a wage subsidy policy
(yearly averages - changes from base case)

	1982-4	1985-7	1988-90
Canada			
GNP (change in millions of 1971$)	642.6	583.6	256.4
GNP price deflator (1971 = 1.00)	0.01	0.05	0.11
Real net foreign trade (millions of 1971$: change in exports less change in imports)	-4.2	-259.0	-618.0
Consumption (change in millions of 1971$)	470.0	823.9	988.0
Ontario			
GDP (at factor cost) (change in millions of 1971$)	261.6	250.5	155.1
Employment (change in thousands)	30.1	22.2	5.1
Real domestic product - goods (change in millions of 1971$)	126.3	93.8	21.3
GDP (at factor cost) per employee (change in thousands of 1971$)	-0.011	-0.027	-0.037

relative rise occurring in the final two years.

The effects of the wage subsidy scheme on Ontario's economy are similar to those on the national economy (see Tables 4.4, 4.20, and 4.21). Employment rises and the unemployment rate falls relative to the base-case projection. At the same time, the output deflator declines initially, then rises; real output increases throughout the period. Its composition is interesting. During the first four years following the introduction of the program, the level of output is more strongly affected in the goods-producing sector - the manufacturing industries in particular - than it is in the service industries. From 1986 on, however, the reverse occurs. The basis for this shift is the changing relative importance of various expenditure components. As we have seen, exports first rise, then decline relative to the base-case projection. Investment goods follow a similar pattern. Expenditures on consumer items, however, begin at a relatively high level and remain there. These patterns are reflected in the structure of industrial shares, because a large proportion of consumer expenditures are made on the service industries, such as retail trade. This fact helps to rationalize the strong growth that the service industries record in the latter half of the simulation. The goods-producing sector is projected to have its strongest growth earlier, when export and investment expenditures receive a positive stimulus.

It is interesting to compare the effects of the wage subsidy scheme with those of the investment tax credit.[10] Both programs affect the supply side of the economy for at least part of the simulation period. The wage subsidy program makes labour relatively cheaper and the investment tax causes capital to be relatively cheaper. Thus, it should not be surprising that employment increases more dramatically under a wage subsidy, and investment expenditures respond more strongly under the investment tax credit. Timing differences, however, also distinguish the policies. The wage subsidy raises Ontario's real GDP by slightly more than $160 million in the first year and peaks at an increase of $340 million in the third; afterwards, the effect, while still positive, declines in magnitude - to $160 million by 1990. In contrast, the investment tax credit raises real provincial GDP by $90 million in the first year, and the relative increase levels off at approximately $240 annually from 1983 to 1988. In 1989 and 1990, it is $314 million and $383 million respectively. Thus, in terms of real output gains, the wage subsidy has the larger immediate impact but the smaller long-run benefit. The behaviour of the price level also makes apparent the long-run natures of the alternative policies. It falls relative to the base case under the investment tax credit but rises eventually under a wage subsidy scheme.

These results suggest that although an investment tax credit may ultimately be a superior policy, the short-run impacts of wage subsidies are stronger and possibly more appropriate for short-run stabilization goals, particularly combating unemployment while incurring only slight increases in the price level.

An increase in the growth rates of the money supply

In this alternative projection, we examine the effects of an increase in the supply of money (see Table 4.5 and the breakdowns in Tables 4.22 to

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[10] Costs for the two are quite similar: the investment tax credit has an annual average cost of $520 million from 1982 to 1985 and $1220 million from 1986 to 1990, while the average cost of the wage subsidy scheme is $560 million per year for the first four years and $970 million for the last five years.

TABLE 4.5
Effect on Canada and Ontario of one-time capital outflow
(yearly averages - changes from base case)

	1982-4	1985-7	1988-90
Canada			
GNP (change in millions of 1971$)	57.8	-186.6	-34.0
GNP price deflator (1971 = 1.00)	0.01	0.01	0.02
Exchange rate	-0.004	0.001	-0.003
Ontario			
GDP (at factor cost) (change in millions of 1971$)	43.2	-65.3	8.0
Employment (change in thousands)	4.7	-3.3	2.5
Real domestic product - goods (change in millions of 1971$)	20.4	-41.9	5.7
Real domestic product - services (change in millions of 1971$)	20.6	-23.1	3.1
Gross domestic product per employee (change in thousands of 1971$)	-0.003	-0.006	-0.004

4.24).[11] The assumed policy change is the Bank of Canada's increase in the upper and lower target bands for the growth rate of the nominal money supply (M1) by 3 per cent per year.[12]

The most immediate and direct result is a decline in both long- and short-term interest rates. In the first year of the simulation, short-term rates decline by sixty-nine basis points, long-term rates by eleven. During the next four years, the long-term rates increase gradually, remaining lower than those of the base case, but the policy's impact on short-term rates diminishes. These movements reflect the way in which FOCUS models interest rates. Nominal interest rates comprise a real interest rate and a term

[11] Many papers and texts present the theoretical aspects of an increase in the supply of money. The reader is referred to Turnovsky (1977) for a thorough and even-handed approach to the theoretical aspects and to Courchene (1976; 1977; 1981) for an in-depth examination of recent Canadian monetary policy. The latter discusses whether the Bank of Canada actually follows a gradualist policy.

[12] The supply of M1 is taken as exogenous, so the actual structure of the policy is a 3 per cent increase in the supply above the previously projected rates.

representing the expected rate of inflation.[13] Increasing the money supply acts to depress the former while increasing the latter. Both factors influence long- and short-term rates in approximately the same manner, although the lag structure and coefficient estimates are different. Short-term interest rates, however, are more substantially influenced by the level of activity in the economy; its effect is sufficiently strong to decrease the policy's impact on short-term but not long-term rates. As shown in the table, the increased money supply has its greatest impact on GNP in 1985, the same year that the fall in short-term rates is the smallest.

In every year of the simulation, nominal GNP increases relative to the base case. Its higher level is divided between a real GNP increase and a price rise. In all years, the percentage increase is greater for prices than for real output. It is interesting to note, however, that the price component is smaller during the final four years than during the initial five. Essentially the phenomenon arises because aggregate supply increases after the years of lower interest rates.

The policy stimulates real output, initially because of investment expenditures and exports and then, during the latter years of the simulation, because of consumption expenditures. For Ontario, this shift indicates a relatively greater impact on real output during the first five years than is experienced by Canada as a whole. When exports and investment expenditures are less important, the effect in Ontario is relatively less than in Canada as a whole.

Employment in Ontario rises and the unemployment rate is projected to decline relative to the base case. For a given increase in real output, however, the resultant increase in employment is not as great for the monetary policy alternative as for the fiscal policy alternatives. This arises because increasing the money supply acts to depress the cost of capital, changing the relative price between the factors of production.

A one-time capital outflow

We set up this alternative to examine the impact on the Canadian economy of a large one-time outflow of capital, perhaps as the result of a Canadian firm's taking over a sizeable U.S. firm located in Canada.[14] The scenario calls for a $2 billion capital outflow in the first quarter of 1982.

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[13] The expectations terms used here are adaptive expectations. See Dungan (1981b) for an examination of the effect of using consistent expectations in the FOCUS model.

The most immediate impression one receives on examining the projection (see Tables 4.6 and 4.25 through 4.27) is that a one-time capital outflow, even on such a scale, does not have large macroeconomic effects in the long term. Certainly, the transaction exerts initial downward pressure on the exchange rate; in the first year of the simulation it falls by 1 per cent. During subsequent years, however, the exchange rate fluctuates around the value projected in the base case, although the change is never as large as the change recorded in the initial year. In other words, the one-shot capital outflow imparts an element of cyclical instability to the foreign exchange market.[15]

A cyclical pattern is also apparent in the effects on the expenditure components of real GNP. Investment declines from 1984 through 1988 because demand falls and interest rates rise slightly. Consumption expenditures are also projected to vary, falling relative to the base case in 1982 and 1986 through to 1988. The net effect on real GNP is an initial increase for two years, followed by a relative decline in every year except 1989. The demand for Canadian exports follows the cyclical movements of the exchange rate relatively closely.[16]

The effects of the outflow on provincial output demonstrate the same cyclical pattern, but with different magnitudes. Real domestic product in the goods-producing industries is more sensitive to the cyclical variations than in the service-sector industries. The heavy manufacturing industries, such as primary metals, motor vehicles, and machinery, are particularly affected by

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[14] See Bank of Montreal (1981) for a discussion of the effects of large capital outflows.

[15] This scenario is extremely sensitive to the assumption regarding capital mobility. As discussed earlier in this chapter, all these alternative projections assume a less-than-perfectly-mobile capital flow. If the degree of capital mobility were greater, the resulting cyclical pattern would be amplified because the initial drop in the exchange rate would also be greater. Alternatively, the Bank of Canada could, if it realized the size and temporary nature of the capital outflow, sterilize it, thereby maintaining the exchange rate and avoiding the resultant cyclical instability.

[16] The demand for imports appears to be sensitive to fluctuations in the exchange rate and the terms of trade because there are no domestic substitutes for some of Canada's imports. This situation has a positive effect on the price level when the exchange rate falls and a negative one when it rises.

TABLE 4.6
Effect on Canada and Ontario of an increase in the money supply
(yearly averages - change from base case)

	1982-4	1985-7	1988-90
Canada			
GNP (change in millions of 1971$)	782.3	1332.9	956.3
GNP price deflator (1971 = 1.00)	0.026	0.058	0.016
Long-term interest rate - (change from projected rate)	0.391	-0.622	-0.607
Ontario			
GDP (at factor cost) (change in millions of 1971$)	319.3	468.2	225
Employment (change in thousands)	23.1	34.0	7.0
Unemployment rate (change from	-0.39	-0.56	-0.11
Real domestic product - goods (change in millions of 1971$)	187.1	270	87

the changes; of the service industries, the finance, insurance, and real estate group undergoes the least cyclical variation.

The impact on the provincial labour market is relatively small. The predominant effect is employment's responses to the rise and fall of aggregate output. The outflow does, however, operate on the labour market through two other channels. First, it exerts upward pressure on the term structure of interest rates during most of the simulated period; the higher interest rates make capital equipment relatively more expensive, and firms respond by decreasing their capital-labour ratio. Second, the change in relative costs has a lagged effect; in 1984, despite a decline in Ontario's real domestic product, total employment rises.

The effects of a rise in U.S. interest rates

Examining the impact on a Canadian economy of a rise in U.S. interest rates requires three scenarios.[17] All assume that short-term interest rates south of the border rise in the first quarter of 1982 to 100 basis points above their base-case values and stay at that level; long-term U.S. rates to rise gradually over one year and then remain 100 basis points above the base-case values. The effect on the Canadian economy depends on the exchange-rate and monetary-policy option the Bank of Canada elects to adopt in response to the higher U.S. interest rates. We examine three policy options.

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[17] The impact of an exogenous rise in foreign interest rates is discussed in Courchene (1981). Also pertinent is the discussion by Sawyer, Dungan, and Jump (1980) of a different kind of foreign shock - namely an expansion in world output - and alternative Bank of Canada responses.

In the first case, the Bank allows the exchange to adjust, clearing the foreign-exchange market, while maintaining its present targets for the money supply. We call this policy combination the flexible exchange rate option. The second policy alternative is to fix the exchange rate but still maintain the money-supply growth rates. This option is referred to here as a fixed exchange rate policy. (Under this regime the Bank of Canada must be willing and able to sterilize the effect on the money supply.) As the third alternative, the Bank adopts a regime to manage a floating exchange rate. Here the objective of monetary policy is to maintain the exchange rate at the base-case levels through the manipulation of domestic interest rates.[18] In order to do so if the movement in U.S. interest rates is large, the Bank must abandon its gradualist approach to monetary policy. We refer to this policy combination as a managed exchange rate policy. In the following subsections, we first discuss in turn the results of each of the three alternative policy combinations, then compare the three for their effects on the domestic interest rate, real expenditures, and the GNP price deflator.

A flexible exchange rate regime

In this scenario, the Bank chooses a passive response, so a rise in U.S. interest rates causes a fall in the exchange rate and upward pressure on domestic interest rates. As shown in Table 4.7 and detailed in Table 4.28, initially there are two real effects. First, the fall in the exchange rate boosts exports and encourages the substitution of domestic for imported goods, which has a positive effect on real GNP. Second, in spite of the gradual rise in interest rates, investment expenditures rise, rather than decline, in response to the higher demand for domestic products. The net effect on real expenditures is, therefore, positive in the initial years of the shock.

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[18] Courchene contends that this has been the Bank's response to changes in U.S. interest rates, a claim that is substantiated in several statements by Gerald Bouey as the governor of the Bank of Canada (Bouey 1981a; 1981b).

TABLE 4.7
Effect on Canada and Ontario of a rise in U.S. interest rates, assuming a flexible exchange rate (yearly averages - changes from base case)

	1982-4	1985-7	1988-90
Canada			
GNP (changes in millions of 1971$)	471.4	149.4	-376.8
GNP price deflator (1971 = 1.00)	0.03	0.06	0.07
Interest rate - industrial bond yield (change from projected rate)	0.21	0.46	0.50
Exchange rate (change from projected rate)	-0.014	-0.009	-0.01
Ontario			
GDP (at factor cost) (change in millions of 1971$)	172.6	-4.6	-257.4
Employment (change in thousands)	13.7	8.2	-11.4
Real domestic product - goods (change in millions of 1971$)	92.9	-10.2	-165.9

The increased demand results in a consumer price level that is progressively higher than the base-case projection (by 0.4 per cent, 0.9 per cent, 1.3 per cent, and 1.5 per cent) in each of the first four years of the shock.[19] During the last five years of the simulation, the price level remains consistently higher than in the base case, offsetting the advantage gained by the lower exchange rate; therefore, the real volume of exports declines in the final four years. Investment expenditures begin to decline in 1986 because of high interest rates and the export slowdown.

A fixed exchange rate

In this case, the Bank of Canada maintains a constant foreign exchange rate with the U.S., offsetting capital flows by trading in the foreign-exchange market. It is able to maintain its money-supply growth targets because foreign reserves are exchanged for domestic reserves.

Initially, this policy combination appears appealing in the face of a rise

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[19] The Bank of Canada has defended its interference in the determination of the exchange rate because of the inflationary impact of a devaluation of the Canadian dollar (see Bouey 1981a). The results here seem to support this claim, at least in the short run.

TABLE 4.8
Effect on Canada and Ontario of a rise in U.S. interest rates, assuming fixed exchange rates (yearly averages - changes from base case)

	1982-4	1985-7	1988-90
Canada			
GNP (change in millions of 1971$)	123.0	302.0	446.5
GNP price deflator (1971 = 1)	0	0	0
Interest rate - industrial bond yield (change from projected rate)	0.01	0.06	0.06
Exchange rate (change from projected rate	0	0	0
Ontario			
GDP (at factor cost) (change in millions of 1971$)	9.7	10.6	7.7
Employment (change in thousands)	0	-1.1	-1.8
Real domestic product - goods (change in millions of 1971$)	-4.2	-6.5	-8.2

in U.S. interest rates (the projected national results are in Tables 4.8 and 4.31). Real GNP rises slightly, largely because of increased demand for exports, and the impact on the GNP price deflator, although positive, is only marginal. The problem appears when we look at the Bank's foreign-exchange reserves. The policy proves very expensive and, therefore, untenable in the long run.[20]

A managed exchange rate

In this case, the Bank of Canada is assumed to adopt an annual target exchange rate, which it achieves through manipulation of the money supply and domestic interest rates. (The targets used in the simulation are the exchange rates generated in the absence of the higher U.S. interest rates.) Therefore, when U.S. interest rates rise, Canadian rates rise in response. The long-term industrial bond yield rises gradually in the first four years but settles at 70 basis points above the base-case projection.[21]

[20] This conclusion merely substantiates traditional economic wisdom, which says that sterilization techniques cannot be maintained indefinitely in the face of a permanent change.

[21] The Canadian bond rate does not rise the full 100 basis points because

The policy combination has a negative effect on real expenditures, with investment suffering the largest relative decline. An initially negative impact on prices reverses itself after two years because the higher interest rates stifle investment activity, shrinking future supply and thus raising the price level (see Tables 4.9 and 4.34).

Alternative policy responses compared

Obviously, the alternative policy responses of the Bank of Canada have quite different results. Figures 4.1 to 4.3 compare their effects on key macroeconomic variables for all Canada.

Figure 4.1 shows the projections for industrial bond yields. The policy that induces the largest increases is the regime of a managed exchange rate. The floating exchange rate also results in a rise in bond yields, but lower ones than the managed exchange rate brings about. The fixed exchange rate effectively isolates the domestic economy from the rise in the U.S. interest rates. It is interesting to note that none of the alternatives results in domestic interest rates rising 100 or more basis points. There are two reasons. First, capital flows are not perfectly mobile, so the Canada-U.S. interest rate differential can change and these differences do persist. Second, the experiment is structured so that U.S. long-term rates rise gradually. By the time they have risen the full 100 basis points, other changes induced by the shock are also affecting Canadian interest rates; most important among them are the level of economic activity and the pattern of the expected rate of inflation.

Figure 4.2 shows the price deflator for GNE under the alternative policy regimes. Again, the fixed exchange rate effectively isolates the domestic economy; there is only slight upward pressure on the price level because the sterilization of capital offsets most of the domestic impacts. Under the flexible exchange rate, the price level rises to a peak of 1.7 per cent above the base case in 1985 and 1986, declines slightly, then rises again. This policy option induces an inflation rate that is continuously higher than inflation under either of the other policies. The managed exchange rate results in a price level that drops initially but rises relative to the base case

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the assumption of less-than-perfectly mobile capital permits a Canada-U.S. differential in interest rates to persist over long periods.

TABLE 4.9
Effect on Canada and Ontario of a rise in U.S. interest rates, assuming a managed exchange rate (yearly averages - changes from base case)

	1982-4	1985-7	1988-90
Canada			
GNP (change in millions of 1971$)	-103.1	-379.1	-704.1
GNP price deflator (1971 = 1.00)	-0.0	0.0	0.03
Interest rate - industrial bond yield (change from projected rate)	0.35	0.69	0.69
Exchange rate (change from projected rate)	0	0	0
Ontario			
GDP (at factor cost) (change in millions of 1971$)	-61.1	-191.4	-325.9
Employment (change in thousands)	-3.9	-7.6	-13.3
Real domestic product - goods (change in millions of 1971$)	-40.2	-111.0	-182.3

after 1984.

The three policies' effects on real GNP are compared in Figure 4.3. Under a fixed exchange rate policy, real GNP rises continously, pushed by the effect of the terms of trade. In contrast, it falls relative to the base case under managed exchange rates, with the largest decline occurring at the end of the simulation period. Under a policy of flexible exchange rates, it first rises - significantly more than under a fixed rate - and then declines relative to the base case, although the decline is not as great as in the case of managed exchange rates.

On the surface, the alternative of a fixed exchange rate appears to be the superior policy choice. Recall, however, that the rate is maintained by the Bank of Canada's offsetting capital flows by trading foreign for domestic reserves. Even assuming a less-than-perfectly-mobile capital flow, the program would cost $850 million per year in foreign reserves. At this rate, the Bank of Canada would exhaust its supplies of foreign reserves long before the end of the simulation period, unless it continually borrowed abroad.[22]

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[22] To keep the experiment simple, we assume in the model that the Bank of Canada has an endless supply of foreign reserves. Note this is not equivalent to assuming the Bank's borrowing abroad, which would increase the stock of Canadian debt held outside the country; the servicing of

Figure 4.1
Effect of a rise in U.S. interest rates on individual bond yields

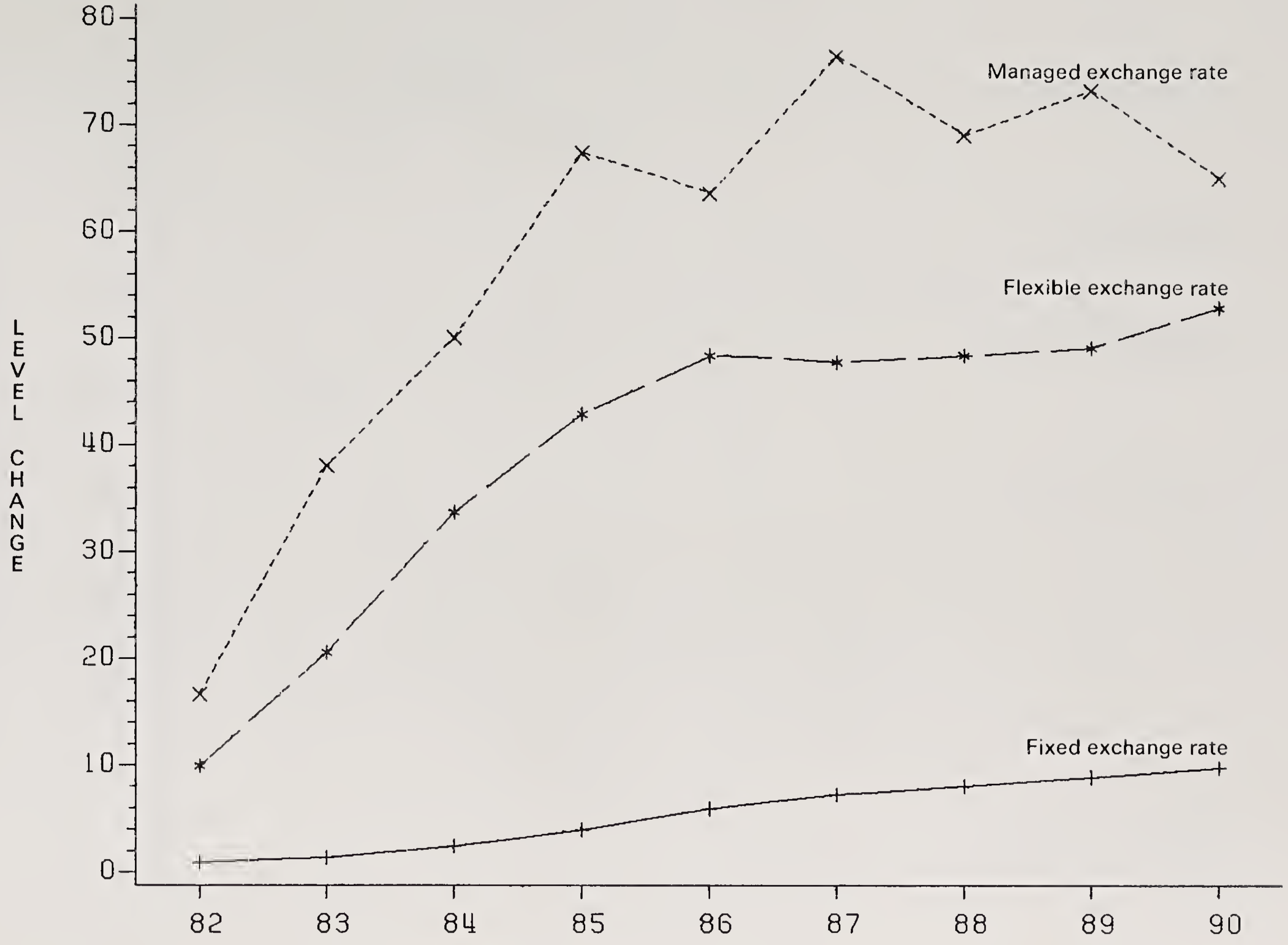


Figure 4.2
Effect of a rise in U.S. interest rates on GNP price deflator

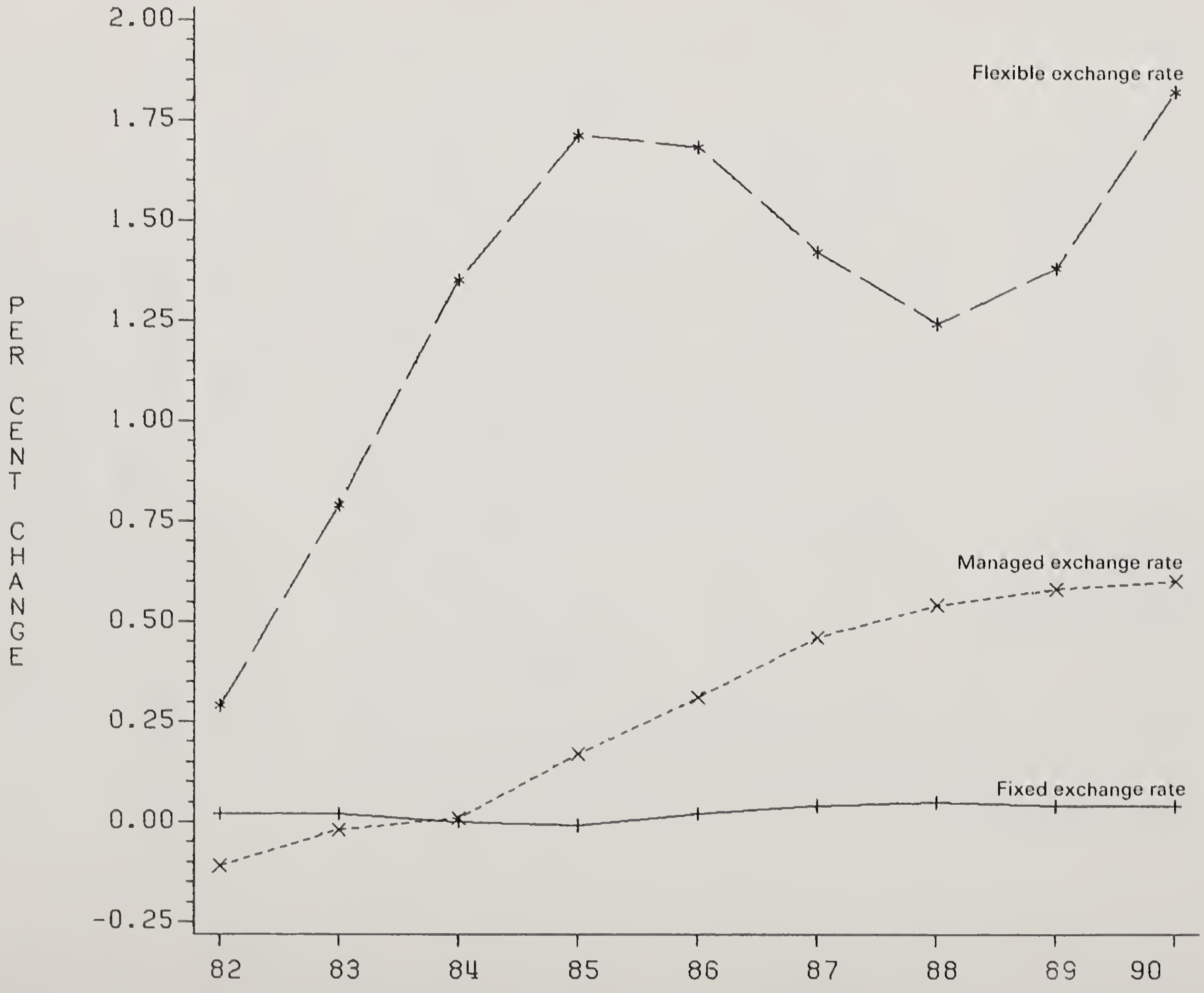
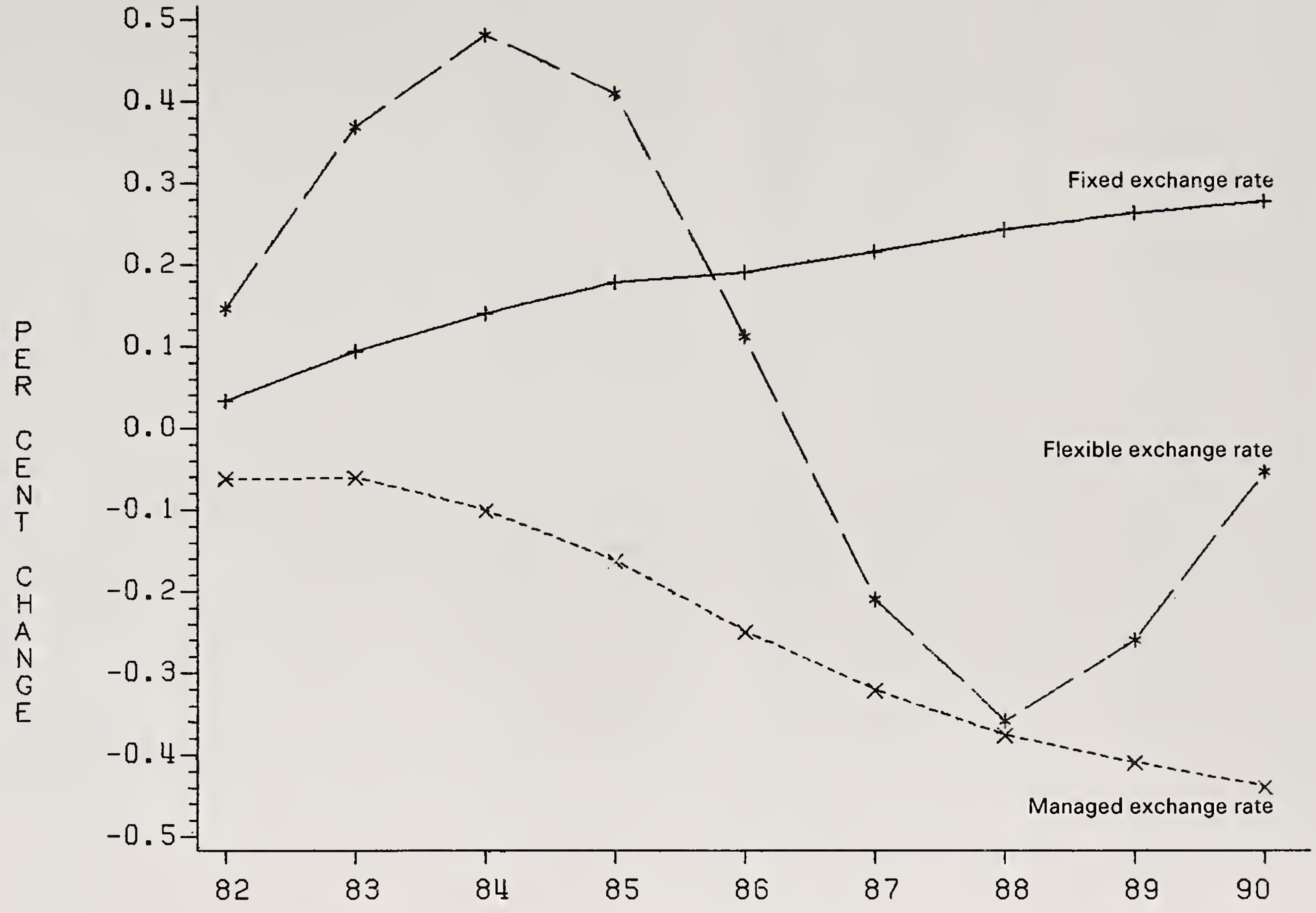


Figure 4.3
Effect of a rise in U.S. interest rates on real GNP



Moreover, the cost would rise if the degree of capital mobility were increased. Thus, if capital were more mobile than is assumed in the model, a policy of a permanently fixed exchange rate would become even less tenable.

Looking at the other alternatives, we see that the choice between a flexible exchange rate and a managed exchange rate involves a trade-off between inflation and GNP growth. Under the former, the choice opts for a higher rate of GNP growth at the cost of a higher rate of inflation. Alternatively, managed exchange rates result in a reduction in the GNP growth rate but less inflation.[23]

The Ontario results of the sensitivity test appear in Tables 4.29, 4.30, 4.32, 4.33, 4.35, and 4.36. The patterns are clearly similar to those for all Canada. Notice, however, that the real effects, both positive and negative, are greater for Ontario than for Canada as a whole because the province has a larger-than-average share of the industries that are most affected by foreign financial shocks - export and import-competing industries and investment industries.

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this debt would have serious implications for the balance of payments and the macroeconomy.

[23] As we have seen, the projection for a policy of managed exchange rates identifies the resultant high domestic interest rates as pushing down investment and thus causing upward price pressure in the future when the capital stock (and therefore potential output) is smaller than in the base case. If U.S. interest rates did jump, the federal government might consider responding with an increase in the investment tax credit of the type discussed elsewhere in this chapter. Such a policy would maintain the equilibrium between returns to investment and money markets, thereby avoiding the detrimental effects of high interest rates.

Table 4.10
National effects of increased government expenditures
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
GROSS NATIONAL PRODUCT	0.83	1.43	1.89	2.03	1.88	1.79	2.16	2.96	3.77
IMPLICIT PRICE DEFLATOR FOR GNP	0.51	1.01	1.50	1.79	1.87	1.97	2.37	3.07	3.87
REAL GROSS NATIONAL PRODUCT	0.32	0.41	0.39	0.24	0.01	-0.18	-0.20	-0.11	-0.10
EXPENDITURE ON PERSONAL CONSUMPTION	0.03	0.17	0.28	0.35	0.35	0.30	0.26	0.32	0.43
EXPENDITURE BY GOVERNMENTS	1.82	1.78	1.75	1.72	1.67	1.63	1.58	1.54	1.49
INVESTMENT EXPENDITURE	0.21	0.49	0.48	0.05	-0.54	-0.92	-0.89	-0.58	-0.41
RESIDENTIAL CONSTRUCTION	-0.18	-0.46	-0.56	-0.53	-0.47	-0.52	-0.78	-1.09	-1.26
NON-RESIDENTIAL AND MACH. & EQUIP.	0.31	0.74	0.78	0.20	-0.55	-1.01	-0.92	-0.46	-0.23
EXPORTS	0.07	0.07	-0.09	-0.41	-0.85	-1.17	-1.16	-1.05	-1.22
IMPORTS	0.63	0.75	0.81	0.73	0.55	0.48	0.56	0.79	0.98
CAPACITY UTILIZATION RATE *	0.00	0.00	0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
UNEMPLOYMENT RATE *	-0.14	-0.28	-0.33	-0.28	-0.18	-0.10	-0.10	-0.21	-0.29
EMPLOYMENT	0.25	0.49	0.56	0.48	0.31	0.17	0.18	0.35	0.49
NARROWLY DEFINED MONEY SUPPLY, M1	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
FINANCE CO. 90-DAY PAPER RATE *	0.18	0.31	0.41	0.45	0.41	0.39	0.47	0.64	0.82
INDUSTRIAL BOND RATE *	0.15	0.26	0.37	0.47	0.53	0.60	0.71	0.82	0.94
CONSUMER PRICE INDEX	0.45	0.91	1.26	1.40	1.38	1.45	1.90	2.52	3.13
AVERAGE ANNUAL WAGES AND SALARIES	0.25	0.75	1.28	1.63	1.73	1.74	1.97	2.52	3.28
PRODUCTIVITY CHANGE (GDP/EMPLOYEE)	0.08	-0.01	-0.07	-0.13	-0.19	-0.23	-0.23	-0.26	-0.33
EXCHANGE RATE (US $/CDN $)	-0.75	-1.28	-1.50	-1.43	-1.13	-1.23	-2.15	-2.79	-3.20
TERMS OF TRADE (PX/PM)	0.09	0.14	0.36	0.64	0.88	0.97	0.83	0.98	1.34
BALANCE ON CURRENT ACCOUNT ($ MILL) *	-616	-782	-859	-992	-1180	-1759	-2501	-2901	-3390
CHANGE IN FOREIGN RESERVES ($ MILL) *	0	0	0	0	0	0	0	0	0
CONSOLIDATED GOVERNMENT BALANCE ($ MILL) *	-341	-44	-121	-713	-1540	-1946	-1171	-129	-73
PERSONAL SAVINGS RATE (%) *	-0.01	-0.01	0.04	0.10	0.10	-0.00	-0.18	-0.24	-0.19
NOMINAL AFTER-TAX CORPORATE PROFITS	3.03	3.38	2.84	1.49	0.20	-0.11	1.27	2.65	2.67
REAL PERSONAL DISPOSABLE INCOME	0.02	0.19	0.38	0.53	0.53	0.35	0.12	0.15	0.35

NOTE: * indicates change in levels.

Table 4.11
Effects on Ontario of increased government expenditures
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
PROVINCIAL GROSS DOMESTIC PRODUCT	0.84	1.52	1.99	2.12	1.96	1.88	2.32	3.22	4.13
REAL PROVINCIAL GDP AT FACTOR COST	0.33	0.50	0.51	0.35	0.09	-0.12	-0.11	0.06	0.13
DEFLATOR, PROV'L GDP AT FACTOR COST	0.55	1.08	1.55	1.86	1.96	2.07	2.50	3.27	4.16
REAL PERSONAL DISP. INCOME PER CAP.	0.04	0.24	0.45	0.59	0.59	0.40	0.21	0.31	0.59
ANNUAL WAGES & SALARIES PER EMPLOYEE	0.21	0.68	1.21	1.58	1.72	1.76	2.00	2.57	3.40
GDP AT FACTOR COST PER EMPLOYEE	0.08	-0.01	-0.07	-0.14	-0.21	-0.26	-0.25	-0.27	-0.35
LABOUR FORCE	0.05	0.10	0.12	0.09	0.05	0.02	0.02	0.06	0.08
EMPLOYMENT	0.25	0.51	0.59	0.49	0.30	0.14	0.15	0.33	0.47
UNEMPLOYMENT RATE (%) *	-0.18	-0.37	-0.44	-0.37	-0.23	-0.11	-0.12	-0.26	-0.37
REAL DOMESTIC PRODUCT - MANUFACTURING	0.12	0.46	0.52	0.24	-0.25	-0.69	-0.69	-0.35	-0.17
RDP - GOODS-PRODUCING INDUSTRIES	0.18	0.48	0.53	0.27	-0.16	-0.54	-0.53	-0.22	-0.06
RDP - SERVICE INDUSTRIES	0.50	0.64	0.63	0.50	0.30	0.16	0.19	0.29	0.31

* See note to Table 4.10.

Table 4.12
Effects of increased government expenditures on Ontario's real domestic product by industry
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
1 AGRICULTURE, FISHING & TRAPPING	0.10	0.26	0.34	0.29	0.12	-0.02	0.02	0.22	0.37
2 FORESTRY	0.18	0.34	0.35	0.15	-0.22	-0.52	-0.55	-0.35	-0.25
3 MINERAL FUEL MINES & WELLS	0.22	0.46	0.54	0.41	0.10	-0.22	-0.24	-0.00	0.15
4 OTHER MINES & QUARRIES	0.07	0.26	0.24	-0.07	-0.57	-0.98	-0.99	-0.75	-0.67
5 FOOD, FEED, BEVERAGES & TOBACCO	0.15	0.33	0.44	0.45	0.38	0.31	0.37	0.56	0.74
6 TEXTILES & CLOTHING	-0.14	0.21	0.43	0.49	0.38	0.09	-0.09	0.08	0.31
7 WOOD & FURNITURE	0.12	0.29	0.30	0.06	-0.34	-0.66	-0.70	-0.49	-0.38
8 PAPER, PRINTING & ALLIED INDUSTRIES	0.31	0.46	0.48	0.31	-0.00	-0.28	-0.30	-0.11	-0.01
9 PRIMARY METAL & METAL FABRICATING	0.04	0.34	0.36	0.02	-0.52	-1.00	-1.01	-0.70	-0.56
10 MOTOR VEHICLES & PARTS	0.25	0.76	0.60	-0.19	-1.33	-2.21	-2.12	-1.45	-1.58
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	-0.02	0.54	0.69	0.17	-0.67	-1.35	-1.28	-0.72	-0.36
12 ELECTRICAL PRODUCTS	-0.07	0.40	0.57	0.30	-0.21	-0.69	-0.74	-0.36	-0.04
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	0.29	0.55	0.64	0.50	0.21	-0.09	-0.11	0.13	0.30
14 NON-METALLIC MINERAL PRODUCTS	0.16	0.46	0.48	0.18	-0.27	-0.68	-0.71	-0.46	-0.31
15 OTHER MANUFACTURING INDUSTRIES	-0.11	0.31	0.60	0.69	0.58	0.24	0.00	0.17	0.47
TOTAL MANUFACTURING	0.12	0.46	0.52	0.24	-0.25	-0.69	-0.69	-0.35	-0.17
16 CONSTRUCTION	0.40	0.59	0.55	0.24	-0.16	-0.46	-0.45	-0.26	-0.16
17 ELECTRIC POWER, WATER & GAS UTILITIES	0.55	0.71	0.76	0.68	0.50	0.36	0.41	0.59	0.71
TOTAL GOODS-PRODUCING INDUSTRIES	0.18	0.48	0.53	0.27	-0.16	-0.54	-0.53	-0.22	-0.06
18 TRANSPORTATION & STORAGE	0.43	0.59	0.57	0.38	0.10	-0.08	0.01	0.18	0.24
19 COMMUNICATION	0.58	0.72	0.71	0.56	0.33	0.16	0.19	0.31	0.34
20 TRADE	0.36	0.60	0.69	0.60	0.37	0.16	0.14	0.35	0.54
21 FINANCE, INSURANCE & REAL ESTATE	0.17	0.26	0.23	0.15	0.02	-0.08	-0.05	-0.01	-0.02
22 OTHER SERVICE INDUSTRIES	0.92	1.01	0.94	0.78	0.57	0.43	0.48	0.53	0.48
TOTAL SERVICE INDUSTRIES	0.50	0.64	0.63	0.50	0.30	0.16	0.19	0.29	0.31
23 GOVERNMENT SECTOR	-0.10	-0.18	-0.24	-0.24	-0.21	-0.21	-0.28	-0.37	-0.45
TOTAL: ALL SECTORS (GROSS PROV. PRODUCT AT FACTOR COST - REAL)	0.33	0.50	0.51	0.35	0.09	-0.12	-0.11	0.06	0.13

Table 4.13
National effects of an increase in personal income taxes
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
GROSS NATIONAL PRODUCT	-0.65	-1.46	-2.24	-2.58	-2.42	-2.09	-2.10	-2.70	-3.67
IMPLICIT PRICE DEFLATOR FOR GNP	-0.42	-1.03	-1.72	-2.20	-2.33	-2.33	-2.50	-3.04	-3.87
REAL GROSS NATIONAL PRODUCT	-0.23	-0.43	-0.52	-0.39	-0.09	0.24	0.41	0.35	0.21
EXPENDITURE ON PERSONAL CONSUMPTION	-0.38	-0.56	-0.76	-0.89	-0.89	-0.79	-0.65	-0.60	-0.64
EXPENDITURE BY GOVERNMENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INVESTMENT EXPENDITURE	-0.22	-0.63	-0.79	-0.35	0.47	1.23	1.52	1.20	0.67
RESIDENTIAL CONSTRUCTION	-0.05	-0.12	0.12	0.35	0.43	0.55	0.83	1.22	1.53
NON-RESIDENTIAL AND MACH. & EQUIP.	-0.26	-0.77	-1.05	-0.53	0.48	1.40	1.68	1.19	0.49
EXPORTS	-0.14	-0.34	-0.31	0.08	0.73	1.29	1.48	1.35	1.23
IMPORTS	-0.42	-0.64	-0.85	-0.82	-0.56	-0.37	-0.32	-0.49	-0.73
CAPACITY UTILIZATION RATE *	-0.00	-0.00	-0.00	-0.00	0.00	0.01	0.00	0.00	0.00
UNEMPLOYMENT RATE *	0.10	0.26	0.38	0.36	0.23	0.07	0.00	0.07	0.20
EMPLOYMENT	-0.17	-0.44	-0.64	-0.61	-0.39	-0.13	-0.01	-0.12	-0.34
NARROWLY DEFINED MONEY SUPPLY, M1	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
FINANCE CO. 90-DAY PAPER RATE *	-0.14	-0.32	-0.50	-0.58	-0.54	-0.47	-0.47	-0.60	-0.82
INDUSTRIAL BOND RATE *	-0.14	-0.27	-0.42	-0.56	-0.64	-0.70	-0.79	-0.89	-1.02
CONSUMER PRICE INDEX	-0.49	-1.09	-1.65	-1.92	-1.90	-1.80	-2.04	-2.60	-3.36
AVERAGE ANNUAL WAGES AND SALARIES	-0.22	-0.76	-1.45	-1.98	-2.18	-2.11	-2.11	-2.44	-3.15
PRODUCTIVITY CHANGE (GDP/EMPLOYEE)	-0.07	-0.06	0.01	0.12	0.21	0.30	0.32	0.32	0.34
EXCHANGE RATE (US $/CDN $)	0.90	1.74	2.21	2.14	1.69	1.31	1.94	2.87	4.02
TERMS OF TRADE (PX/PM)	0.10	0.12	-0.11	-0.52	-0.87	-1.12	-1.04	-0.99	-1.04
BALANCE ON CURRENT ACCOUNT ($ MILL) *	525	622	693	814	973	1327	2055	2663	3241
CHANGE IN FOREIGN RESERVES ($ MILL) *	0	0	0	0	0	0	0	0	0
CONSDLIDATED GOVERNMENT BALANCE ($ MILL) *	1079	269	-225	87	1020	1827	1379	-133	-1620
PERSONAL SAVINGS RATE (%) *	-0.29	-0.12	-0.05	-0.08	-0.08	0.01	0.24	0.41	0.45
NOMINAL AFTER-TAX CORPORATE PROFITS	-2.31	-3.85	-4.03	-2.50	-0.39	0.95	0.23	-1.62	-3.10
REAL PERSONAL DISPOSABLE INCOME	-0.70	-0.71	-0.87	-1.05	-1.08	-0.86	-0.46	-0.23	-0.25

* See note to Table 4.10.

Table 4.14
Effects on Ontario of an increase in personal income taxes
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
PROVINCIAL GROSS DOMESTIC PRODUCT	-0.67	-1.55	-2.33	-2.66	-2.47	-2.11	-2.16	-2.86	-3.93
REAL PROVINCIAL GDP AT FACTOR COST	-0.25	-0.53	-0.67	-0.53	-0.17	0.22	0.39	0.27	0.05
DEFLATOR, PROV'L GDP AT FACTOR COST	-0.41	-1.06	-1.74	-2.22	-2.38	-2.38	-2.57	-3.17	-4.08
REAL PERSONAL DISP. INCOME PER CAP.	-0.72	-0.80	-0.98	-1.17	-1.16	-0.91	-0.52	-0.37	-0.51
ANNUAL WAGES & SALARIES PER EMPLOYEE	-0.19	-0.70	-1.37	-1.93	-2.18	-2.14	-2.16	-2.51	-3.28
GDP AT FACTOR COST PER EMPLOYEE	-0.08	-0.07	0.00	0.12	0.22	0.32	0.35	0.34	0.36
LABOUR FORCE	-0.04	-0.10	-0.13	-0.12	-0.07	-0.01	0.02	-0.01	-0.05
EMPLOYMENT	-0.17	-0.47	-0.67	-0.65	-0.40	-0.10	0.04	-0.08	-0.31
UNEMPLOYMENT RATE (%) *	0.12	0.34	0.50	0.48	0.30	0.08	-0.02	0.06	0.24
REAL DOMESTIC PRODUCT - MANUFACTURING	-0.21	-0.65	-0.90	-0.67	-0.00	0.75	1.10	0.85	0.41
RDP - GOODS-PRODUCING INDUSTRIES	-0.22	-0.63	-0.86	-0.64	-0.05	0.61	0.92	0.69	0.28
RDP - SERVICE INDUSTRIES	-0.33	-0.59	-0.70	-0.60	-0.33	-0.04	0.07	-0.00	-0.15

* See note to Table 4.10.

Table 4.15
Effects of an increase in personal income taxes on Ontario's real domestic product by industry
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
1 AGRICULTURE, FISHING & TRAPPING	-0.18	-0.52	-0.75	-0.75	-0.53	-0.25	-0.11	-0.23	-0.48
2 FORESTRY	-0.23	-0.53	-0.69	-0.49	0.01	0.54	0.82	0.70	0.42
3 MINERAL FUEL MINES & WELLS	-0.12	-0.48	-0.70	-0.62	-0.21	0.32	0.60	0.45	0.13
4 OTHER MINES & QUARRIES	-0.11	-0.45	-0.59	-0.27	0.42	1.12	1.44	1.26	0.90
5 FOOD, FEED, BEVERAGES & TOBACCO	-0.21	-0.56	-0.82	-0.91	-0.82	-0.64	-0.55	-0.67	-0.91
6 TEXTILES & CLOTHING	-0.46	-0.79	-1.11	-1.26	-1.12	-0.71	-0.24	-0.16	-0.34
7 WOOD & FURNITURE	-0.26	-0.56	-0.70	-0.46	0.08	0.66	0.96	0.83	0.54
8 PAPER, PRINTING & ALLIED INDUSTRIES	-0.21	-0.50	-0.66	-0.52	-0.09	0.37	0.62	0.50	0.24
9 PRIMARY METAL & METAL FABRICATING	-0.11	-0.52	-0.72	-0.40	0.35	1.17	1.54	1.30	0.86
10 MOTOR VEHICLES & PARTS	-0.57	-1.27	-1.55	-0.80	0.85	2.42	3.00	2.40	1.75
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	0.12	-0.47	-0.83	-0.39	0.71	1.87	2.29	1.78	0.95
12 ELECTRICAL PRODUCTS	-0.15	-0.59	-0.90	-0.71	-0.04	0.76	1.19	0.93	0.39
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	-0.16	-0.54	-0.78	-0.70	-0.32	0.18	0.46	0.32	-0.01
14 NON-METALLIC MINERAL PRODUCTS	-0.20	-0.64	-0.81	-0.51	0.12	0.83	1.19	1.03	0.63
15 OTHER MANUFACTURING INDUSTRIES	-0.22	-0.54	-0.88	-1.07	-0.98	-0.54	-0.01	0.09	-0.14
TOTAL MANUFACTURING	-0.21	-0.65	-0.90	-0.67	-0.00	0.75	1.10	0.85	0.41
16 CONSTRUCTION	-0.28	-0.65	-0.74	-0.42	0.15	0.72	0.96	0.81	0.47
17 ELECTRIC POWER, WATER & GAS UTILITIES	-0.25	-0.56	-0.76	-0.73	-0.50	-0.23	-0.12	-0.26	-0.50
TOTAL GOODS-PRODUCING INDUSTRIES	-0.22	-0.63	-0.86	-0.64	-0.05	0.61	0.92	0.69	0.28
18 TRANSPORTATION & STORAGE	-0.27	-0.56	-0.66	-0.47	-0.08	0.29	0.38	0.20	-0.06
19 COMMUNICATION	-0.29	-0.55	-0.67	-0.54	-0.24	0.08	0.19	0.09	-0.09
20 TRADE	-0.45	-0.77	-1.03	-1.01	-0.71	-0.33	-0.08	-0.18	-0.45
21 FINANCE, INSURANCE & REAL ESTATE	-0.29	-0.51	-0.58	-0.49	-0.29	-0.08	0.00	-0.02	-0.08
22 OTHER SERVICE INDUSTRIES	-0.32	-0.55	-0.61	-0.47	-0.19	0.07	0.12	0.05	-0.05
TOTAL SERVICE INDUSTRIES	-0.33	-0.59	-0.70	-0.60	-0.33	-0.04	0.07	-0.00	-0.15
23 GOVERNMENT SECTOR	0.10	0.22	0.31	0.33	0.28	0.24	0.28	0.37	0.50
TOTAL: ALL SECTORS (GROSS PROV. PRODUCT AT FACTOR COST - REAL)	-0.25	-0.53	-0.67	-0.53	-0.17	0.22	0.39	0.27	0.05

Table 4.16
National effects of doubling investment tax credits
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
GROSS NATIONAL PRODUCT	0.02	0.34	0.46	0.39	0.20	-0.01	-0.03	0.17	0.37
IMPLICIT PRICE DEFLATOR FOR GNP	-0.12	0.02	0.09	0.03	-0.12	-0.29	-0.35	-0.25	-0.12
REAL GROSS NATIONAL PRODUCT	0.13	0.32	0.38	0.35	0.32	0.29	0.32	0.42	0.49
EXPENDITURE ON PERSONAL CONSUMPTION	0.01	0.09	0.19	0.21	0.23	0.23	0.22	0.24	0.32
EXPENDITURE BY GOVERNMENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INVESTMENT EXPENDITURE	0.33	0.69	0.75	0.65	0.43	0.30	0.40	0.68	0.89
RESIDENTIAL CONSTRUCTION	-0.02	-0.08	-0.09	0.03	0.10	0.14	0.13	0.05	0.01
NON-RESIDENTIAL AND MACH. & EQUIP.	0.42	0.89	0.99	0.81	0.51	0.34	0.46	0.82	1.08
EXPORTS	0.28	0.68	0.78	0.67	0.61	0.59	0.70	0.88	0.93
IMPORTS	0.09	0.28	0.44	0.34	0.26	0.24	0.26	0.37	0.49
CAPACITY UTILIZATION RATE *	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01
UNEMPLOYMENT RATE *	-0.01	-0.10	-0.16	-0.14	-0.10	-0.07	-0.07	-0.12	-0.17
EMPLOYMENT	0.01	0.17	0.27	0.23	0.17	0.11	0.11	0.20	0.29
NARROWLY DEFINED MONEY SUPPLY, M1	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
FINANCE CO. 90-DAY PAPER RATE *	0.00	0.08	0.10	0.09	0.04	-0.00	-0.01	0.04	0.08
INDUSTRIAL BOND RATE *	0.00	0.05	0.06	0.08	0.07	0.06	0.06	0.07	0.06
CONSUMER PRICE INDEX	0.01	0.17	0.17	0.12	-0.06	-0.21	-0.21	-0.09	-0.03
AVERAGE ANNUAL WAGES AND SALARIES	0.03	0.13	0.26	0.32	0.22	0.08	0.01	0.08	0.25
PRODUCTIVITY CHANGE (GDP/EMPLOYEE)	0.16	0.22	0.19	0.20	0.22	0.23	0.26	0.29	0.29
EXCHANGE RATE (US $/CDN $)	-0.57	-0.82	-0.58	-0.66	-0.24	-0.12	-0.31	-0.60	-0.43
TERMS OF TRADE (PX/PM)	-0.41	-0.49	-0.35	-0.41	-0.33	-0.38	-0.51	-0.59	-0.43
BALANCE ON CURRENT ACCOUNT ($ MILL) *	-272	-133	8	-183	30	-65	-198	-289	-32
CHANGE IN FOREIGN RESERVES ($ MILL) *	0	0	0	0	0	0	0	0	0
CONSOLIDATED GOVERNMENT BALANCE ($ MILL) *	-731	-263	-336	-742	-1262	-1592	-1392	-876	-967
PERSONAL SAVINGS RATE (%) *	-0.01	-0.02	0.06	0.07	0.10	0.08	0.02	-0.02	0.04
NOMINAL AFTER-TAX CORPORATE PROFITS	2.82	3.92	3.38	2.71	2.14	1.85	2.37	3.15	3.14
REAL PERSONAL DISPOSABLE INCOME	-0.00	0.07	0.27	0.31	0.37	0.33	0.23	0.22	0.38

* See note to Table 4.10.

Table 4.17
Effects on Ontario of doubling investment tax credits (percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
PROVINCIAL GROSS DOMESTIC PRODUCT	0.09	0.47	0.60	0.50	0.31	0.09	0.07	0.29	0.51
REAL PROVINCIAL GDP AT FACTOR COST	0.19	0.45	0.53	0.48	0.44	0.38	0.42	0.54	0.64
DEFLATOR, PROV'L GDP AT FACTOR COST	-0.11	0.05	0.11	0.05	-0.11	-0.28	-0.34	-0.24	-0.09
REAL PERSONAL DISP. INCOME PER CAP.	0.02	0.13	0.32	0.36	0.41	0.35	0.23	0.27	0.45
ANNUAL WAGES & SALARIES PER EMPLOYEE	0.04	0.13	0.25	0.32	0.23	0.10	0.02	0.09	0.26
GDP AT FACTOR COST PER EMPLOYEE	0.17	0.24	0.20	0.21	0.23	0.24	0.27	0.30	0.30
LABOUR FORCE	0.01	0.05	0.07	0.06	0.04	0.03	0.03	0.05	0.07
EMPLOYMENT	0.03	0.21	0.32	0.27	0.21	0.15	0.15	0.24	0.34
UNEMPLOYMENT RATE (%) *	-0.02	-0.15	-0.23	-0.20	-0.15	-0.11	-0.11	-0.18	-0.25
REAL DOMESTIC PRODUCT - MANUFACTURING	0.30	0.77	0.93	0.81	0.75	0.61	0.64	0.87	1.11
RDP - GOODS-PRODUCING INDUSTRIES	0.27	0.69	0.82	0.72	0.66	0.54	0.57	0.78	0.98
RDP - SERVICE INDUSTRIES	0.17	0.36	0.41	0.40	0.36	0.33	0.37	0.47	0.53

* See note to Table 4.10.

Table 4.18
Effects of doubling investment tax credits on Ontario's real domestic product by industry
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
1 AGRICULTURE,FISHING & TRAPPING	0.13	0.37	0.49	0.46	0.45	0.41	0.43	0.54	0.65
2 FORESTRY	0.19	0.53	0.68	0.60	0.54	0.47	0.50	0.66	0.82
3 MINERAL FUEL MINES & WELLS	0.21	0.54	0.67	0.65	0.65	0.55	0.55	0.70	0.90
4 OTHER MINES & QUARRIES	0.26	0.69	0.85	0.73	0.65	0.56	0.61	0.83	1.03
5 FOOD,FEED,BEVERAGES & TOBACCO	0.11	0.28	0.37	0.38	0.37	0.34	0.35	0.44	0.52
6 TEXTILES & CLOTHING	0.12	0.40	0.60	0.60	0.68	0.59	0.52	0.59	0.81
7 WOOD & FURNITURE	0.21	0.56	0.71	0.61	0.54	0.46	0.50	0.67	0.84
8 PAPER,PRINTING & ALLIED INDUSTRIES	0.17	0.48	0.62	0.55	0.52	0.46	0.48	0.63	0.78
9 PRIMARY METAL & METAL FABRICATING	0.32	0.80	0.96	0.82	0.75	0.61	0.65	0.91	1.16
10 MOTOR VEHICLES & PARTS	0.52	1.60	1.82	1.45	1.31	1.03	1.20	1.76	2.20
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	0.55	1.20	1.38	1.17	1.02	0.74	0.78	1.15	1.59
12 ELECTRICAL PRODUCTS	0.36	0.80	0.96	0.84	0.77	0.58	0.57	0.79	1.11
13 CHEMICAL,RUBBER & PETROLEUM PRODUCTS	0.21	0.55	0.68	0.63	0.62	0.53	0.53	0.68	0.86
14 NON-METALLIC MINERAL PRODUCTS	0.30	0.69	0.82	0.73	0.63	0.52	0.56	0.79	0.98
15 OTHER MANUFACTURING INDUSTRIES	0.18	0.43	0.63	0.65	0.76	0.64	0.52	0.58	0.84
TOTAL MANUFACTURING	0.30	0.77	0.93	0.81	0.75	0.61	0.64	0.87	1.11
16 CONSTRUCTION	0.24	0.52	0.59	0.53	0.38	0.30	0.37	0.56	0.68
17 ELECTRIC POWER,WATER & GAS UTILITIES	0.14	0.34	0.41	0.39	0.35	0.31	0.33	0.44	0.54
TOTAL GOODS-PRODUCING INDUSTRIES	0.27	0.69	0.82	0.72	0.66	0.54	0.57	0.78	0.98
18 TRANSPORTATION & STORAGE	0.23	0.48	0.51	0.47	0.40	0.35	0.41	0.55	0.62
19 COMMUNICATION	0.19	0.39	0.43	0.42	0.37	0.33	0.38	0.49	0.56
20 TRADE	0.13	0.38	0.52	0.48	0.45	0.38	0.38	0.50	0.66
21 FINANCE,INSURANCE & REAL ESTATE	0.15	0.29	0.32	0.33	0.31	0.31	0.35	0.42	0.45
22 OTHER SERVICE INDUSTRIES	0.20	0.36	0.37	0.37	0.32	0.31	0.37	0.46	0.48
TOTAL SERVICE INDUSTRIES	0.17	0.36	0.41	0.40	0.36	0.33	0.37	0.47	0.53
23 GOVERNMENT SECTOR	0.00	-0.02	-0.01	0.01	0.06	0.08	0.08	0.04	0.03
TOTAL: ALL SECTORS (GROSS PROV. PRODUCT AT FACTOR COST - REAL)	0.19	0.45	0.53	0.48	0.44	0.38	0.42	0.54	0.64

Table 4.19
National effects of a wage subsidy policy
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
GROSS NATIONAL PRODUCT	0.19	0.68	1.12	1.40	1.55	1.67	1.97	2.52	3.18
IMPLICIT PRICE DEFLATOR FOR GNP	-0.11	0.17	0.55	0.89	1.16	1.42	1.79	2.36	3.05
REAL GROSS NATIONAL PRODUCT	0.30	0.50	0.57	0.50	0.39	0.25	0.17	0.15	0.13
EXPENDITURE ON PERSONAL CONSUMPTION	0.35	0.55	0.71	0.81	0.88	0.90	0.89	0.93	0.99
EXPENDITURE BY GOVERNMENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INVESTMENT EXPENDITURE	0.17	0.46	0.53	0.33	0.00	-0.31	-0.48	-0.46	-0.42
RESIDENTIAL CONSTRUCTION	0.16	0.45	0.40	0.25	0.10	-0.08	-0.31	-0.58	-0.80
NON-RESIDENTIAL AND MACH. & EQUIP.	0.17	0.46	0.57	0.35	-0.02	-0.37	-0.51	-0.43	-0.34
EXPORTS	0.19	0.53	0.62	0.38	0.09	-0.19	-0.37	-0.47	-0.66
IMPORTS	0.10	0.42	0.67	0.69	0.65	0.65	0.69	0.83	0.98
CAPACITY UTILIZATION RATE *	0.00	0.00	0.00	0.00	-0.00	-0.00	-0.00	-0.00	-0.00
UNEMPLOYMENT RATE *	-0.21	-0.39	-0.47	-0.45	-0.40	-0.34	-0.32	-0.34	-0.38
EMPLOYMENT	0.35	0.67	0.79	0.76	0.67	0.58	0.53	0.57	0.63
NARROWLY DEFINED MONEY SUPPLY, M1	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
FINANCE CO. 90-DAY PAPER RATE *	0.04	0.15	0.25	0.31	0.34	0.37	0.43	0.55	0.69
INDUSTRIAL BOND RATE *	0.02	0.10	0.20	0.29	0.38	0.47	0.57	0.69	0.82
CONSUMER PRICE INDEX	-0.00	0.28	0.57	0.82	0.97	1.14	1.48	1.97	2.51
AVERAGE ANNUAL WAGES AND SALARIES	0.09	0.37	0.77	1.17	1.47	1.71	2.02	2.49	3.13
PRODUCTIVITY CHANGE (GDP/EMPLOYEE)	-0.03	-0.13	-0.17	-0.20	-0.22	-0.25	-0.27	-0.29	-0.33
EXCHANGE RATE (US $/CDN $)	-0.39	-0.77	-0.96	-1.13	-1.09	-1.18	-1.69	-2.19	-2.66
TERMS OF TRADE (PX/PM)	-0.30	-0.35	-0.18	-0.00	0.23	0.40	0.45	0.62	0.89
BALANCE ON CURRENT ACCOUNT ($ MILL) *	-279	-347	-386	-640	-801	-1179	-1742	-2266	-2891
CHANGE IN FOREIGN RESERVES ($ MILL) *	0	0	0	0	0	0	0	0	0
CONSOLIDATED GOVERNMENT BALANCE ($ MILL) *	-991	-500	-272	-469	-887	-1268	-1157	-776	-747
PERSONAL SAVINGS RATE (%) *	0.24	0.16	0.11	0.09	0.09	0.03	-0.07	-0.13	-0.15
NOMINAL AFTER-TAX CORPORATE PROFITS	0.77	1.83	2.12	1.60	0.98	0.61	1.04	1.75	2.06
REAL PERSONAL DISPOSABLE INCOME	0.63	0.75	0.87	0.97	1.03	1.00	0.89	0.87	0.94

* See note to Table 4.10.

Table 4.20
Effects on Ontario of a wage subsidy policy
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
PROVINCIAL GROSS DOMESTIC PRODUCT	0.24	0.75	1.19	1.46	1.60	1.72	2.05	2.66	3.40
REAL PROVINCIAL GDP AT FACTOR COST	0.36	0.59	0.68	0.61	0.49	0.33	0.25	0.27	0.28
DEFLATOR, PROV'L GDP AT FACTOR COST	-0.12	0.16	0.53	0.88	1.16	1.43	1.83	2.45	3.21
REAL PERSONAL DISP. INCOME PER CAP.	0.88	0.84	0.96	1.05	1.11	1.07	0.99	1.02	1.16
ANNUAL WAGES & SALARIES PER EMPLOYEE	-0.22	0.02	0.40	0.81	1.13	1.39	1.73	2.24	2.94
GDP AT FACTOR COST PER EMPLOYEE	-0.03	-0.12	-0.16	-0.20	-0.23	-0.27	-0.28	-0.30	-0.35
LABOUR FORCE	0.08	0.15	0.17	0.15	0.13	0.11	0.09	0.10	0.11
EMPLOYMENT	0.39	0.72	0.85	0.81	0.71	0.60	0.54	0.57	0.64
UNEMPLOYMENT RATE (%) *	-0.28	-0.52	-0.63	-0.61	-0.54	-0.46	-0.41	-0.45	-0.49
REAL DOMESTIC PRODUCT - MANUFACTURING	0.52	0.84	0.95	0.78	0.53	0.20	0.01	0.04	0.07
RDP - GOODS-PRODUCING INDUSTRIES	0.45	0.76	0.87	0.73	0.50	0.22	0.07	0.10	0.14
RDP - SERVICE INDUSTRIES	0.35	0.59	0.68	0.66	0.57	0.48	0.44	0.45	0.46

* See note to Table 4.10.

Table 4.21
Effects of a wage subsidy policy on Ontario's domestic product by industry
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
1 AGRICULTURE, FISHING & TRAPPING	0.25	0.54	0.72	0.75	0.71	0.63	0.61	0.68	0.77
2 FORESTRY	0.34	0.63	0.75	0.62	0.43	0.20	0.06	0.04	0.05
3 MINERAL FUEL MINES & WELLS	0.39	0.63	0.74	0.70	0.56	0.34	0.21	0.23	0.28
4 OTHER MINES & QUARRIES	0.33	0.62	0.71	0.50	0.20	-0.13	-0.33	-0.38	-0.43
5 FOOD, FEED, BEVERAGES & TOBACCO	0.24	0.52	0.71	0.80	0.84	0.83	0.86	0.97	1.11
6 TEXTILES & CLOTHING	0.68	0.92	1.08	1.16	1.17	1.05	0.90	0.92	1.01
7 WOOD & FURNITURE	0.34	0.64	0.76	0.61	0.39	0.14	-0.03	-0.05	-0.05
8 PAPER, PRINTING & ALLIED INDUSTRIES	0.32	0.59	0.72	0.63	0.47	0.27	0.16	0.16	0.17
9 PRIMARY METAL & METAL FABRICATING	0.43	0.73	0.80	0.58	0.27	-0.11	-0.33	-0.36	-0.37
10 MOTOR VEHICLES & PARTS	1.03	1.74	1.86	1.31	0.61	-0.14	-0.58	-0.62	-0.89
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	0.48	0.73	0.78	0.47	0.03	-0.51	-0.74	-0.70	-0.60
12 ELECTRICAL PRODUCTS	0.54	0.77	0.85	0.70	0.46	0.11	-0.09	-0.05	0.07
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	0.42	0.69	0.80	0.75	0.62	0.42	0.31	0.34	0.41
14 NON-METALLIC MINERAL PRODUCTS	0.42	0.72	0.77	0.60	0.34	0.03	-0.15	-0.18	-0.17
15 OTHER MANUFACTURING INDUSTRIES	0.74	0.86	0.95	1.02	1.04	0.87	0.68	0.68	0.80
TOTAL MANUFACTURING	0.52	0.84	0.95	0.78	0.53	0.20	0.01	0.04	0.07
16 CONSTRUCTION	0.25	0.53	0.58	0.44	0.20	-0.03	-0.16	-0.17	-0.16
17 ELECTRIC POWER, WATER & GAS UTILITIES	0.26	0.52	0.66	0.67	0.63	0.56	0.55	0.63	0.71
TOTAL GOODS-PRODUCING INDUSTRIES	0.45	0.76	0.87	0.73	0.50	0.22	0.07	0.10	0.14
18 TRANSPORTATION & STORAGE	0.33	0.57	0.62	0.55	0.40	0.26	0.22	0.25	0.28
19 COMMUNICATION	0.34	0.56	0.64	0.60	0.50	0.39	0.35	0.36	0.37
20 TRADE	0.46	0.76	0.94	0.95	0.88	0.77	0.70	0.77	0.87
21 FINANCE, INSURANCE & REAL ESTATE	0.31	0.52	0.60	0.59	0.53	0.46	0.43	0.42	0.40
22 OTHER SERVICE INDUSTRIES	0.33	0.54	0.60	0.57	0.47	0.38	0.36	0.36	0.32
TOTAL SERVICE INDUSTRIES	0.35	0.59	0.68	0.66	0.57	0.48	0.44	0.45	0.46
23 GOVERNMENT SECTOR	0.01	-0.05	-0.09	-0.12	-0.14	-0.16	-0.21	-0.28	-0.36
TOTAL: ALL SECTORS (GROSS PROV. PRODUCT AT FACTOR COST - REAL)	0.36	0.59	0.68	0.61	0.49	0.33	0.25	0.27	0.28

Table 4.22
National effects of increased money supply growth rates
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
GROSS NATIONAL PRODUCT	0.47	1.37	2.36	2.90	2.58	1.74	1.05	1.07	1.72
IMPLICIT PRICE DEFLATOR FOR GNP	0.29	0.81	1.42	1.82	1.64	1.12	0.65	0.60	0.97
REAL GROSS NATIONAL PRODUCT	0.17	0.55	0.93	1.06	0.92	0.62	0.40	0.47	0.74
EXPENDITURE ON PERSONAL CONSUMPTION	0.04	0.21	0.49	0.74	0.85	0.76	0.62	0.55	0.64
EXPENDITURE BY GOVERNMENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INVESTMENT EXPENDITURE	0.82	1.96	2.57	2.31	1.39	0.41	0.03	0.44	1.26
RESIDENTIAL CONSTRUCTION	1.11	2.60	2.92	2.69	2.43	1.89	1.32	0.88	0.60
NON-RESIDENTIAL AND MACH. & EQUIP.	0.76	1.83	2.50	2.24	1.20	0.15	-0.18	0.37	1.36
EXPORTS	0.12	0.38	0.74	0.78	0.44	-0.01	-0.24	-0.10	0.27
IMPORTS	0.24	0.55	0.72	0.60	0.12	-0.32	-0.46	-0.25	0.20
CAPACITY UTILIZATION RATE *	0.00	0.00	0.01	0.00	-0.00	-0.00	-0.00	-0.00	0.00
UNEMPLOYMENT RATE *	-0.07	-0.29	-0.51	-0.58	-0.44	-0.19	-0.01	-0.02	-0.19
EMPLOYMENT	0.13	0.49	0.86	0.98	0.74	0.32	0.01	0.04	0.32
NARROWLY DEFINED MONEY SUPPLY, M1	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
FINANCE CO. 90-DAY PAPER RATE *	-0.69	-0.49	-0.28	-0.16	-0.23	-0.41	-0.56	-0.56	-0.42
INDUSTRIAL BOND RATE *	-0.11	-0.45	-0.61	-0.68	-0.62	-0.57	-0.59	-0.62	-0.62
CONSUMER PRICE INDEX	0.26	0.72	1.22	1.43	1.18	0.70	0.35	0.40	0.75
AVERAGE ANNUAL WAGES AND SALARIES	0.21	0.61	1.27	1.87	2.01	1.64	1.12	0.89	1.15
PRODUCTIVITY CHANGE (GDP/EMPLOYEE)	0.07	0.12	0.13	0.10	0.11	0.15	0.20	0.25	0.26
EXCHANGE RATE (US $/CDN $)	-0.70	-1.93	-2.87	-2.81	-1.93	-0.80	-0.25	-0.73	-1.51
TERMS OF TRADE (PX/PM)	0.07	0.14	0.24	0.42	0.41	0.29	0.15	0.07	0.15
BALANCE ON CURRENT ACCOUNT ($ MILL) *	-114	-110	362	995	1459	1404	980	648	748
CHANGE IN FOREIGN RESERVES ($ MILL) *	0	0	0	0	0	0	0	0	0
CONSOLIDATED GOVERNMENT BALANCE ($ MILL) *	581	1668	2659	2666	1323	-333	-992	268	2495
PERSONAL SAVINGS RATE (%) *	0.01	0.02	0.08	0.23	0.36	0.33	0.17	-0.02	-0.08
NOMINAL AFTER-TAX CORPORATE PROFITS	1.91	4.49	5.97	4.67	1.76	-0.69	-1.06	0.76	3.01
REAL PERSONAL DISPOSABLE INCOME	-0.02	0.12	0.50	0.96	1.23	1.09	0.72	0.42	0.46

* See note to Table 4.10

Table 4.23
Effects on Ontario of increased money supply growth rates
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
PROVINCIAL GROSS DOMESTIC PRODUCT	0.47	1.54	2.63	3.13	2.62	1.59	0.79	0.81	1.54
REAL PROVINCIAL GDP AT FACTOR COST	0.20	0.66	1.10	1.21	0.95	0.52	0.23	0.30	0.62
DEFLATOR, PROV'L GDP AT FACTOR COST	0.29	0.96	1.64	2.07	1.81	1.14	0.56	0.50	0.94
REAL PERSONAL DISP. INCOME PER CAP.	-0.06	-0.01	0.19	0.52	0.84	0.87	0.68	0.40	0.30
ANNUAL WAGES & SALARIES PER EMPLOYEE	0.19	0.58	1.23	1.85	2.03	1.70	1.18	0.93	1.18
GDP AT FACTOR COST PER EMPLOYEE	0.07	0.14	0.17	0.14	0.13	0.15	0.19	0.25	0.28
LABOUR FORCE	0.02	0.11	0.20	0.22	0.16	0.07	0.01	0.01	0.07
EMPLOYMENT	0.13	0.52	0.93	1.07	0.82	0.37	0.04	0.05	0.34
UNEMPLOYMENT RATE (%) *	-0.10	-0.38	-0.69	-0.80	-0.61	-0.28	-0.03	-0.04	-0.26
REAL DOMESTIC PRODUCT - MANUFACTURING	0.24	1.04	1.90	2.15	1.64	0.77	0.14	0.23	0.87
RDP - GOODS-PRODUCING INDUSTRIES	0.27	1.02	1.76	1.96	1.49	0.71	0.16	0.25	0.83
RDP - SERVICE INDUSTRIES	0.19	0.55	0.86	0.92	0.75	0.48	0.31	0.37	0.59

* See note to Table 4.10

Table 4.24
Effects of increased money supply growth rates on Ontario's real domestic product by industry
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
1 AGRICULTURE,FISHING & TRAPPING	0.06	0.37	0.80	1.07	1.00	0.69	0.40	0.37	0.60
2 FORESTRY	0.20	0.71	1.25	1.44	1.10	0.50	0.07	0.12	0.56
3 MINERAL FUEL MINES & WELLS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 OTHER MINES & QUARRIES	0.24	0.87	1.51	1.68	1.19	0.41	-0.11	-0.02	0.55
5 FOOD,FEED,BEVERAGES & TOBACCO	0.07	0.36	0.75	1.01	1.00	0.79	0.56	0.52	0.71
6 TEXTILES & CLOTHING	-0.02	0.40	1.18	1.82	1.99	1.60	0.95	0.61	0.82
7 WOOD & FURNITURE	0.27	0.84	1.40	1.55	1.14	0.47	0.03	0.11	0.61
8 PAPER,PRINTING & ALLIED INDUSTRIES	0.11	0.52	1.02	1.23	0.99	0.49	0.10	0.12	0.48
9 PRIMARY METAL & METAL FABRICATING	0.30	1.13	1.94	2.12	1.54	0.61	-0.03	0.09	0.76
10 MOTOR VEHICLES & PARTS	0.50	1.95	3.42	3.53	2.23	0.49	-0.49	-0.03	1.43
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	0.36	1.75	2.99	3.08	2.02	0.64	-0.17	0.14	1.18
12 ELECTRICAL PRODUCTS	0.31	1.37	2.37	2.60	1.94	0.91	0.19	0.30	1.04
13 CHEMICAL,RUBBER & PETROLEUM PRODUCTS	0.12	0.67	1.34	1.68	1.47	0.89	0.36	0.31	0.69
14 NON-METALLIC MINERAL PRODUCTS	0.54	1.43	2.10	2.24	1.71	0.82	0.21	0.31	0.92
15 OTHER MANUFACTURING INDUSTRIES	-0.10	0.41	1.32	2.06	2.25	1.76	0.94	0.50	0.66
TOTAL MANUFACTURING	0.24	1.04	1.90	2.15	1.64	0.77	0.14	0.23	0.87
16 CONSTRUCTION	0.70	1.53	1.96	1.88	1.30	0.52	0.11	0.31	0.89
17 ELECTRIC POWER,WATER & GAS UTILITIES	0.15	0.52	0.92	1.08	0.91	0.57	0.31	0.35	0.63
TOTAL GOODS-PRODUCING INDUSTRIES	0.27	1.02	1.76	1.96	1.49	0.71	0.16	0.25	0.83
18 TRANSPORTATION & STORAGE	0.22	0.68	1.07	1.10	0.79	0.36	0.11	0.24	0.58
19 COMMUNICATION	0.18	0.57	0.91	0.96	0.74	0.43	0.24	0.33	0.59
20 TRADE	0.20	0.71	1.26	1.48	1.26	0.78	0.42	0.45	0.84
21 FINANCE,INSURANCE & REAL ESTATE	0.17	0.46	0.67	0.70	0.61	0.45	0.35	0.39	0.51
22 OTHER SERVICE INDUSTRIES	0.19	0.48	0.69	0.68	0.53	0.35	0.26	0.35	0.51
TOTAL SERVICE INDUSTRIES	0.19	0.55	0.86	0.92	0.75	0.48	0.31	0.37	0.59
23 GOVERNMENT SECTOR	-0.05	-0.14	-0.21	-0.22	-0.12	0.01	0.07	0.04	-0.06
TOTAL: ALL SECTORS (GROSS PROV. PRODUCT AT FACTOR COST - REAL)	0.20	0.66	1.10	1.21	0.95	0.52	0.23	0.30	0.62

* See note to Table 4.10

Table 4.25
National effects of a one-time capital outflow
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
GROSS NATIONAL PRODUCT	0.36	0.44	0.27	0.16	-0.01	-0.01	0.24	0.49	0.49
IMPLICIT PRICE DEFLATOR FOR GNP	0.26	0.36	0.32	0.25	0.14	0.13	0.29	0.47	0.52
REAL GROSS NATIONAL PRODUCT	0.10	0.08	-0.05	-0.08	-0.14	-0.14	-0.05	0.02	-0.03
EXPENDITURE ON PERSONAL CONSUMPTION	-0.01	0.10	0.04	0.03	-0.01	-0.05	-0.04	0.01	0.03
EXPENDITURE BY GOVERNMENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INVESTMENT EXPENDITURE	0.12	0.10	-0.00	-0.25	-0.36	-0.28	-0.06	0.11	0.02
RESIDENTIAL CONSTRUCTION	-0.17	-0.21	-0.07	-0.05	-0.07	-0.08	-0.21	-0.26	-0.17
NON-RESIDENTIAL AND MACH. & EQUIP.	0.19	0.18	0.01	-0.30	-0.43	-0.33	-0.03	0.19	0.07
EXPORTS	0.27	0.33	-0.11	-0.07	-0.14	-0.11	0.06	0.14	-0.02
IMPORTS	-0.01	0.35	0.14	0.07	0.05	0.03	0.12	0.21	0.19
CAPACITY UTILIZATION RATE *	0.00	0.00	-0.00	-0.00	-0.00	-0.00	0.00	0.00	-0.00
UNEMPLOYMENT RATE *	-0.05	-0.10	-0.03	0.01	0.05	0.05	-0.00	-0.05	-0.04
EMPLOYMENT	0.09	0.17	0.05	-0.01	-0.07	-0.09	0.00	0.09	0.07
NARROWLY DEFINED MONEY SUPPLY, M1	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
FINANCE CO. 90-DAY PAPER RATE *	0.08	0.10	0.06	0.04	-0.00	-0.00	0.05	0.11	0.11
INDUSTRIAL BOND RATE *	0.09	0.05	0.07	0.06	0.06	0.05	0.08	0.08	0.09
CONSUMER PRICE INDEX	0.35	0.25	0.27	0.13	0.08	0.12	0.30	0.42	0.41
AVERAGE ANNUAL WAGES AND SALARIES	0.18	0.28	0.35	0.23	0.14	0.07	0.17	0.35	0.47
PRODUCTIVITY CHANGE (GDP/EMPLOYEE)	0.04	-0.05	-0.07	-0.04	-0.06	-0.04	-0.02	-0.03	-0.06
EXCHANGE RATE (US $/CDN $)	-1.02	0.10	-0.42	0.18	0.09	-0.12	-0.47	-0.41	-0.24
TERMS OF TRADE (PX/PM)	-0.32	0.25	0.06	0.24	0.13	0.01	-0.06	0.07	0.19
BALANCE ON CURRENT ACCOUNT ($ MILL) *	-66	330	-330	183	-137	-308	-323	-76	-109
CHANGE IN FOREIGN RESERVES ($ MILL) *	0	0	0	0	0	0	0	0	0
CONSOLIDATED GOVERNMENT BALANCE ($ MILL) *	521	309	-44	-231	-359	-103	505	731	160
PERSONAL SAVINGS RATE (%) *	-0.11	0.05	0.01	0.04	-0.00	-0.07	-0.10	-0.04	0.02
NOMINAL AFTER-TAX CORPORATE PROFITS	1.23	0.40	-0.61	-0.64	-0.84	-0.29	0.59	0.75	-0.00
REAL PERSONAL DISPOSABLE INCOME	-0.13	0.16	0.06	0.08	-0.01	-0.14	-0.15	-0.02	0.08

* See note to Table 4.10.

Table 4.26
Effects on Ontario of a one-time capital outflow
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
PROVINCIAL GROSS DOMESTIC PRODUCT	0.41	0.50	0.30	0.19	-0.01	-0.02	0.28	0.54	0.54
REAL PROVINCIAL GDP AT FACTOR COST	0.14	0.14	-0.03	-0.06	-0.16	-0.15	-0.03	0.06	0.01
DEFLATOR, PROV'L GDP AT FACTOR COST	0.29	0.39	0.34	0.27	0.15	0.14	0.31	0.51	0.56
REAL PERSONAL DISP. INCOME PER CAP.	-0.10	0.18	0.06	0.08	-0.02	-0.03	-0.14	0.01	0.11
ANNUAL WAGES & SALARIES PER EMPLOYEE	0.17	0.26	0.34	0.24	0.15	0.08	0.17	0.36	0.49
GDP AT FACTOR COST PER EMPLOYEE	0.04	-0.05	-0.08	-0.05	-0.07	-0.04	-0.02	-0.03	-0.06
LABOUR FORCE	0.02	0.04	0.01	-0.00	-0.02	-0.02	-0.00	0.02	0.01
EMPLOYMENT	0.10	0.19	0.04	-0.01	-0.09	-0.11	-0.01	0.09	0.07
UNEMPLOYMENT RATE (%) *	-0.07	-0.14	-0.03	0.01	0.07	0.08	0.01	-0.07	-0.05
REAL DOMESTIC PRODUCT - MANUFACTURING	0.20	0.31	-0.14	-0.09	-0.32	-0.31	-0.07	0.12	0.03
RDP - GOODS-PRODUCING INDUSTRIES	0.18	0.27	-0.10	-0.09	-0.28	-0.27	-0.06	0.11	0.03
RDP - SERVICE INDUSTRIES	0.15	0.09	0.01	-0.05	-0.10	-0.09	-0.00	0.04	-0.00

* See note to Table 4.10.

Table 4.27
Effects of a one-time capital outflow on Ontario's real domestic product by industry
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
1 AGRICULTURE, FISHING & TRAPPING	0.13	0.16	-0.02	-0.02	-0.10	-0.10	0.00	0.08	0.05
2 FORESTRY	0.12	0.22	-0.08	-0.10	-0.22	-0.21	-0.05	0.07	0.02
3 MINERAL FUEL MINES & WELLS	0.17	0.22	-0.07	-0.03	-0.21	-0.21	-0.05	0.09	0.04
4 OTHER MINES & QUARRIES	0.18	0.26	-0.15	-0.15	-0.31	-0.28	-0.06	0.09	-0.01
5 FOOD, FEED, BEVERAGES & TOBACCO	0.11	0.12	0.03	0.02	-0.05	-0.06	0.02	0.08	0.07
6 TEXTILES & CLOTHING	0.05	0.28	-0.01	0.10	-0.11	-0.21	-0.13	0.04	0.08
7 WOOD & FURNITURE	0.11	0.22	-0.08	-0.12	-0.24	-0.23	-0.06	0.07	0.02
8 PAPER, PRINTING & ALLIED INDUSTRIES	0.13	0.21	-0.08	-0.07	-0.18	-0.18	-0.04	0.08	0.02
9 PRIMARY METAL & METAL FABRICATING	0.20	0.29	-0.15	-0.13	-0.36	-0.33	-0.08	0.11	0.01
10 MOTOR VEHICLES & PARTS	0.43	0.70	-0.57	-0.31	-0.76	-0.69	-0.13	0.26	-0.15
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	0.28	0.39	-0.13	-0.16	-0.55	-0.46	-0.08	0.22	0.10
12 ELECTRICAL PRODUCTS	0.13	0.30	-0.04	-0.06	-0.34	-0.34	-0.10	0.13	0.10
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	0.17	0.23	-0.06	-0.02	-0.20	-0.20	-0.05	0.09	0.04
14 NON-METALLIC MINERAL PRODUCTS	0.18	0.20	-0.07	-0.13	-0.30	-0.28	-0.09	0.07	0.01
15 OTHER MANUFACTURING INDUSTRIES	0.05	0.27	0.01	0.15	-0.13	-0.22	-0.15	0.03	0.10
TOTAL MANUFACTURING	0.20	0.31	-0.14	-0.09	-0.32	-0.31	-0.07	0.12	0.03
16 CONSTRUCTION	0.12	0.08	0.00	-0.18	-0.24	-0.20	-0.06	0.06	0.01
17 ELECTRIC POWER, WATER & GAS UTILITIES	0.15	0.16	0.04	0.00	-0.07	-0.07	0.03	0.10	0.07
TOTAL GOODS-PRODUCING INDUSTRIES	0.18	0.27	-0.10	-0.09	-0.28	-0.27	-0.06	0.11	0.03
18 TRANSPORTATION & STORAGE	0.29	0.19	0.07	-0.01	-0.08	-0.05	0.09	0.14	0.06
19 COMMUNICATION	0.16	0.09	0.00	-0.06	-0.12	-0.10	0.00	0.05	0.00
20 TRADE	0.07	0.20	0.02	-0.02	-0.12	-0.15	-0.04	0.09	0.07
21 FINANCE, INSURANCE & REAL ESTATE	0.12	0.03	0.00	-0.06	-0.08	-0.07	-0.01	0.00	-0.03
22 OTHER SERVICE INDUSTRIES	0.19	0.03	0.00	-0.08	-0.10	-0.08	0.01	0.02	-0.04
TOTAL SERVICE INDUSTRIES	0.15	0.09	0.01	-0.05	-0.10	-0.09	-0.00	0.04	-0.00
23 GOVERNMENT SECTOR	-0.07	-0.04	-0.04	-0.01	-0.00	-0.02	-0.05	-0.07	-0.06
TOTAL: ALL SECTORS (GROSS PROV. PRODUCT AT FACTOR COST - REAL)	0.14	0.14	-0.03	-0.06	-0.16	-0.15	-0.03	0.06	0.01

Table 4.28
National effects of a rise in U.S. interest rates, assuming a flexible exchange rate
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
GROSS NATIONAL PRODUCT	0.44	1.17	1.84	2.12	1.79	1.20	0.88	1.12	1.77
IMPLICIT PRICE DEFLATOR FOR GNP	0.29	0.79	1.35	1.71	1.68	1.42	1.24	1.38	1.82
REAL GROSS NATIONAL PRODUCT	0.15	0.37	0.48	0.41	0.11	-0.21	-0.36	-0.26	-0.05
EXPENDITURE ON PERSONAL CONSUMPTION	-0.00	0.09	0.20	0.29	0.28	0.16	0.02	-0.06	-0.02
EXPENDITURE BY GOVERNMENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INVESTMENT EXPENDITURE	0.14	0.34	0.45	0.11	-0.56	-1.22	-1.44	-1.07	-0.45
RESIDENTIAL CONSTRUCTION	-0.19	-0.53	-0.76	-0.77	-0.60	-0.48	-0.55	-0.73	-0.89
NON-RESIDENTIAL AND MACH. & EQUIP.	0.22	0.58	0.79	0.34	-0.55	-1.39	-1.64	-1.15	-0.35
EXPORTS	0.33	0.82	0.90	0.64	0.02	-0.55	-0.72	-0.46	-0.11
IMPORTS	-0.11	-0.04	-0.05	-0.12	-0.27	-0.48	-0.57	-0.46	-0.21
CAPACITY UTILIZATION RATE *	0.00	0.00	0.00	0.00	-0.00	-0.01	-0.01	-0.00	0.00
UNEMPLOYMENT RATE *	-0.06	-0.18	-0.27	-0.25	-0.11	0.07	0.18	0.14	0.02
EMPLOYMENT	0.10	0.31	0.46	0.43	0.19	-0.11	-0.29	-0.23	-0.02
NARROWLY DEFINED MONEY SUPPLY, M1	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
FINANCE CO. 90-DAY PAPER RATE *	0.10	0.26	0.40	0.46	0.39	0.27	0.19	0.24	0.39
INDUSTRIAL BOND RATE *	0.10	0.20	0.34	0.43	0.48	0.48	0.48	0.49	0.53
CONSUMER PRICE INDEX	0.39	0.86	1.34	1.48	1.31	0.99	0.90	1.16	1.62
AVERAGE ANNUAL WAGES AND SALARIES	0.20	0.61	1.17	1.57	1.62	1.30	0.99	0.96	1.29
PRODUCTIVITY CHANGE (GDP/EMPLOYEE)	0.05	0.05	0.01	-0.08	-0.18	-0.25	-0.25	-0.19	-0.16
EXCHANGE RATE (US $/CDN $)	-1.08	-1.67	-2.25	-1.73	-1.14	-0.40	-0.47	-1.15	-1.86
TERMS OF TRADE (PX/PM)	-0.38	-0.44	-0.40	0.06	0.41	0.65	0.53	0.27	0.18
BALANCE ON CURRENT ACCOUNT ($ MILL) *	51	596	901	1475	1427	1374	1037	795	950
CHANGE IN FOREIGN RESERVES ($ MILL) *	0	0	0	0	0	0	0	0	0
CONSOLIDATED GOVERNMENT BALANCE ($ MILL) *	634	1527	2183	2071	1178	302	519	2097	4000
PERSONAL SAVINGS RATE (%) *	-0.12	-0.14	-0.11	0.01	0.07	0.03	-0.13	-0.29	-0.31
NOMINAL AFTER-TAX CORPORATE PROFITS	1.53	3.07	3.37	2.00	-0.40	-1.95	-1.60	0.29	2.08
REAL PERSONAL DISPOSABLE INCOME	-0.14	-0.05	0.11	0.38	0.44	0.25	-0.09	-0.35	-0.33

* See note to Table 4.10.

Table 4.29
Effects on Ontario of a rise in U.S. interest rates, assuming a flexible exchange rate
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
PROVINCIAL GROSS DOMESTIC PRODUCT	0.45	1.17	1.80	2.01	1.61	0.95	0.59	0.86	1.56
REAL PROVINCIAL GDP AT FACTOR COST	0.16	0.40	0.51	0.40	0.01	-0.41	-0.61	-0.49	-0.24
DEFLATOR, PROV'L GDP AT FACTOR COST	0.30	0.82	1.35	1.70	1.67	1.40	1.20	1.34	1.82
REAL PERSONAL DISP. INCOME PER CAP.	-0.11	0.03	0.22	0.49	0.50	0.26	-0.10	-0.32	-0.24
ANNUAL WAGES & SALARIES PER EMPLOYEE	0.18	0.58	1.12	1.54	1.63	1.36	1.05	1.01	1.35
GDP AT FACTOR COST PER EMPLOYEE	0.05	0.06	0.01	-0.08	-0.19	-0.27	-0.27	-0.21	-0.17
LABOUR FORCE	0.02	0.07	0.10	0.10	0.04	-0.03	-0.07	-0.06	-0.01
EMPLOYMENT	0.10	0.34	0.50	0.48	0.20	-0.14	-0.34	-0.29	-0.07
UNEMPLOYMENT RATE (%) *	-0.08	-0.25	-0.37	-0.35	-0.15	0.10	0.25	0.22	0.05
REAL DOMESTIC PRODUCT - MANUFACTURING	0.19	0.64	0.85	0.73	-0.03	-0.85	-1.26	-1.06	-0.55
RDP - GOODS-PRODUCING INDUSTRIES	0.18	0.58	0.76	0.64	-0.03	-0.74	-1.09	-0.90	-0.44
RDP - SERVICE INDUSTRIES	0.18	0.37	0.47	0.34	0.06	-0.25	-0.38	-0.30	-0.12

* See note to Table 4.10.

Table 4.30
Effects of a rise in U.S. interest rates on Ontario's real domestic product by industry, assuming a flexible exchange rate
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
1 AGRICULTURE, FISHING & TRAPPING	0.12	0.37	0.52	0.49	0.19	-0.20	-0.42	-0.36	-0.13
2 FORESTRY	0.12	0.42	0.55	0.42	-0.08	-0.66	-0.97	-0.84	-0.49
3 MINERAL FUEL MINES & WELLS	0.17	0.52	0.71	0.70	0.17	-0.44	-0.80	-0.70	-0.37
4 OTHER MINES & QUARRIES	0.17	0.57	0.69	0.49	-0.22	-0.98	-1.34	-1.14	-0.67
5 FOOD, FEED, BEVERAGES & TOBACCO	0.11	0.30	0.45	0.46	0.28	0.01	-0.16	-0.13	0.04
6 TEXTILES & CLOTHING	0.03	0.33	0.57	0.79	0.52	0.03	-0.47	-0.63	-0.49
7 WOOD & FURNITURE	0.11	0.41	0.52	0.37	-0.16	-0.76	-1.07	-0.93	-0.54
8 PAPER, PRINTING & ALLIED INDUSTRIES	0.13	0.43	0.56	0.47	0.01	-0.53	-0.82	-0.71	-0.40
9 PRIMARY METAL & METAL FABRICATING	0.19	0.63	0.81	0.62	-0.20	-1.06	-1.48	-1.25	-0.71
10 MOTOR VEHICLES & PARTS	0.45	1.45	1.68	1.29	-0.50	-2.16	-2.79	-2.16	-1.08
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	0.26	0.87	1.22	0.94	-0.32	-1.53	-2.03	-1.62	-0.77
12 ELECTRICAL PRODUCTS	0.11	0.50	0.76	0.68	-0.07	-0.89	-1.35	-1.17	-0.62
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	0.17	0.53	0.73	0.70	0.20	-0.38	-0.74	-0.66	-0.33
14 NON-METALLIC MINERAL PRODUCTS	0.17	0.50	0.64	0.45	-0.19	-0.91	-1.28	-1.11	-0.64
15 OTHER MANUFACTURING INDUSTRIES	0.01	0.32	0.60	0.86	0.56	0.04	-0.54	-0.74	-0.59
TOTAL MANUFACTURING	0.19	0.64	0.85	0.73	-0.03	-0.85	-1.26	-1.06	-0.55
16 CONSTRUCTION	0.13	0.30	0.37	0.12	-0.35	-0.87	-1.09	-0.88	-0.45
17 ELECTRIC POWER, WATER & GAS UTILITIES	0.21	0.51	0.67	0.63	0.36	0.05	-0.11	-0.02	0.21
TOTAL GOODS-PRODUCING INDUSTRIES	0.18	0.58	0.76	0.64	-0.03	-0.74	-1.09	-0.90	-0.44
18 TRANSPORTATION & STORAGE	0.51	1.04	1.26	1.09	0.68	0.31	0.19	0.39	0.69
19 COMMUNICATION	0.19	0.39	0.49	0.35	0.02	-0.32	-0.46	-0.35	-0.13
20 TRADE	0.08	0.32	0.49	0.48	0.17	-0.25	-0.51	-0.46	-0.19
21 FINANCE, INSURANCE & REAL ESTATE	0.13	0.23	0.27	0.14	-0.06	-0.29	-0.38	-0.32	-0.22
22 OTHER SERVICE INDUSTRIES	0.20	0.35	0.41	0.22	-0.06	-0.35	-0.43	-0.32	-0.17
TOTAL SERVICE INDUSTRIES	0.18	0.37	0.47	0.34	0.06	-0.25	-0.38	-0.30	-0.12
23 GOVERNMENT SECTOR	-0.08	-0.17	-0.24	-0.23	-0.17	-0.09	-0.09	-0.15	-0.23
TOTAL: ALL SECTORS (GROSS PROV. PRODUCT AT FACTOR COST - REAL)	0.16	0.40	0.51	0.40	0.01	-0.41	-0.61	-0.49	-0.24

Table 4.31
National effects of a rise in U.S. interest rates, assuming a fixed exchange rate
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
GROSS NATIONAL PRODUCT	0.05	0.11	0.14	0.17	0.21	0.26	0.29	0.30	0.32
IMPLICIT PRICE DEFLATOR FOR GNP	0.02	0.02	0.00	-0.01	0.02	0.04	0.05	0.04	0.04
REAL GROSS NATIONAL PRODUCT	0.03	0.09	0.14	0.18	0.19	0.22	0.24	0.26	0.28
EXPENDITURE ON PERSONAL CONSUMPTION	0.00	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.04
EXPENDITURE BY GOVERNMENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INVESTMENT EXPENDITURE	0.01	0.04	0.04	0.02	0.02	0.05	0.06	0.04	0.02
RESIDENTIAL CONSTRUCTION	-0.01	-0.01	-0.01	-0.03	-0.06	-0.09	-0.09	-0.08	-0.08
NON-RESIDENTIAL AND MACH. & EQUIP.	0.01	0.05	0.05	0.03	0.04	0.08	0.10	0.07	0.04
EXPORTS	0.15	0.30	0.40	0.46	0.51	0.55	0.57	0.60	0.64
IMPORTS	0.03	-0.00	-0.07	-0.15	-0.14	-0.15	-0.23	-0.29	-0.33
CAPACITY UTILIZATION RATE *	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UNEMPLOYMENT RATE *	-0.01	-0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01
EMPLOYMENT	0.01	0.01	-0.00	-0.01	-0.01	-0.00	-0.01	-0.02	-0.02
NARROWLY DEFINED MONEY SUPPLY, M1	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
FINANCE CO. 90-DAY PAPER RATE *	0.01	0.02	0.03	0.04	0.05	0.06	0.06	0.07	0.07
INDUSTRIAL BOND RATE *	0.01	0.01	0.02	0.04	0.06	0.07	0.08	0.09	0.10
CONSUMER PRICE INDEX	0.02	0.03	0.02	0.02	0.05	0.06	0.07	0.06	0.05
AVERAGE ANNUAL WAGES AND SALARIES	0.01	0.02	0.02	0.01	0.01	0.03	0.04	0.03	0.01
PRODUCTIVITY CHANGE (GDP/EMPLOYEE)	0.00	0.03	0.04	0.05	0.04	0.04	0.04	0.05	0.06
EXCHANGE RATE (US $/CDN $)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TERMS OF TRADE (PX/PM)	-0.04	-0.10	-0.16	-0.22	-0.22	-0.22	-0.25	-0.28	-0.30
BALANCE ON CURRENT ACCOUNT ($ MILL) *	102	299	502	749	924	1171	1491	1877	2334
CHANGE IN FOREIGN RESERVES ($ MILL) *	-535	-764	-1065	-1102	-1005	-845	-652	-424	-163
CONSOLIDATED GOVERNMENT BALANCE ($ MILL) *	82	201	331	507	728	965	1223	1501	1884
PERSONAL SAVINGS RATE (%) *	-0.00	0.01	0.01	0.00	-0.01	-0.01	-0.00	-0.00	-0.01
NOMINAL AFTER-TAX CORPORATE PROFITS	0.22	0.44	0.61	0.77	0.88	0.93	0.96	0.97	1.03
REAL PERSONAL DISPOSABLE INCOME	-0.00	0.02	0.03	0.03	0.02	0.03	0.04	0.04	0.04

* See note to Table 4.10.

Table 4.32
Effects on Ontario of a rise in U.S. interest rates, assuming a fixed exchange rate
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
PROVINCIAL GROSS DOMESTIC PRODUCT	0.02	0.02	-0.01	-0.03	-0.00	0.06	-0.00	-0.03	-0.04
REAL PROVINCIAL GDP AT FACTOR COST	0.01	0.02	0.03	0.02	0.02	0.02	0.02	0.01	0.01
DEFLATOR, PROV'L GDP AT FACTOR COST	0.02	-0.00	-0.03	-0.06	-0.04	-0.03	-0.05	-0.07	-0.09
REAL PERSONAL DISP. INCOME PER CAP.	-0.00	0.02	0.02	0.02	0.01	0.02	0.03	0.04	0.03
ANNUAL WAGES & SALARIES PER EMPLOYEE	0.01	0.02	0.02	0.01	0.01	0.02	0.04	0.03	0.02
GDP AT FACTOR COST PER EMPLOYEE	0.00	0.02	0.04	0.05	0.04	0.04	0.04	0.05	0.06
LABOUR FORCE	0.00	-0.00	-0.00	-0.01	-0.01	-0.00	-0.01	-0.01	-0.01
EMPLOYMENT	0.01	-0.00	-0.01	-0.03	-0.02	-0.02	-0.03	-0.04	-0.04
UNEMPLOYMENT RATE (%) *	-0.00	-0.00	0.01	0.02	0.01	0.01	0.02	0.03	0.03
REAL DOMESTIC PRODUCT - MANUFACTURING	-0.03	-0.05	-0.06	-0.06	-0.06	-0.08	-0.08	-0.08	-0.08
RDP - GOODS-PRODUCING INDUSTRIES	-0.02	-0.02	-0.03	-0.03	-0.03	-0.04	-0.04	-0.04	-0.04
RDP - SERVICE INDUSTRIES	0.03	0.06	0.07	0.06	0.06	0.06	0.06	0.05	0.05

* See note to Table 4.10.

Table 4.33

Effects of a rise in U.S. interest rates on Ontario's real domestic product by industry, assuming a fixed exchange rate
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
1 AGRICULTURE, FISHING & TRAPPING	-0.02	-0.04	-0.05	-0.04	-0.03	-0.04	-0.05	-0.05	-0.04
2 FORESTRY	-0.02	-0.03	-0.03	-0.02	-0.01	-0.02	-0.03	-0.03	-0.02
3 MINERAL FUEL MINES & WELLS	-0.01	-0.02	-0.02	-0.01	-0.02	-0.03	-0.04	-0.03	-0.03
4 OTHER MINES & QUARRIES	-0.03	-0.05	-0.05	-0.04	-0.02	-0.03	-0.04	-0.04	-0.03
5 FOOD, FEED, BEVERAGES & TOBACCO	-0.02	-0.04	-0.05	-0.05	-0.05	-0.05	-0.06	-0.06	-0.06
6 TEXTILES & CLOTHING	-0.04	-0.06	-0.07	-0.07	-0.10	-0.12	-0.12	-0.11	-0.12
7 WOOD & FURNITURE	-0.01	-0.03	-0.03	-0.02	-0.01	-0.01	-0.02	-0.02	-0.02
8 PAPER, PRINTING & ALLIED INDUSTRIES	-0.02	-0.03	-0.03	-0.02	-0.01	-0.02	-0.03	-0.02	-0.02
9 PRIMARY METAL & METAL FABRICATING	-0.03	-0.06	-0.06	-0.06	-0.06	-0.08	-0.08	-0.08	-0.08
10 MOTOR VEHICLES & PARTS	-0.03	-0.04	-0.03	-0.00	0.02	-0.01	-0.02	-0.01	0.01
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	-0.05	-0.08	-0.11	-0.15	-0.17	-0.17	-0.16	-0.18	-0.20
12 ELECTRICAL PRODUCTS	-0.04	-0.07	-0.10	-0.13	-0.16	-0.16	-0.15	-0.17	-0.19
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	-0.01	-0.02	-0.02	-0.02	-0.03	-0.04	-0.04	-0.04	-0.04
14 NON-METALLIC MINERAL PRODUCTS	-0.02	-0.03	-0.03	-0.04	-0.05	-0.05	-0.06	-0.06	-0.07
15 OTHER MANUFACTURING INDUSTRIES	-0.06	-0.10	-0.12	-0.14	-0.19	-0.21	-0.21	-0.20	-0.21
TOTAL MANUFACTURING	-0.03	-0.05	-0.06	-0.06	-0.06	-0.08	-0.08	-0.08	-0.08
16 CONSTRUCTION	0.01	0.02	0.02	-0.00	0.00	0.01	0.01	-0.01	-0.02
17 ELECTRIC POWER, WATER & GAS UTILITIES	0.08	0.16	0.20	0.20	0.21	0.22	0.22	0.22	0.23
TOTAL GOODS-PRODUCING INDUSTRIES	-0.02	-0.02	-0.03	-0.03	-0.03	-0.04	-0.04	-0.04	-0.04
18 TRANSPORTATION & STORAGE	0.28	0.57	0.69	0.72	0.74	0.79	0.80	0.81	0.83
19 COMMUNICATION	0.02	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04
20 TRADE	-0.00	-0.00	-0.01	-0.03	-0.03	-0.02	-0.03	-0.04	-0.05
21 FINANCE, INSURANCE & REAL ESTATE	-0.00	-0.00	-0.01	-0.01	-0.02	-0.02	-0.03	-0.03	-0.03
22 OTHER SERVICE INDUSTRIES	0.01	0.02	0.02	0.01	0.01	0.01	0.00	-0.00	-0.00
TOTAL SERVICE INDUSTRIES	0.03	0.06	0.07	0.06	0.06	0.06	0.06	0.05	0.05
23 GOVERNMENT SECTOR	-0.01	-0.01	-0.01	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02
TOTAL: ALL SECTORS (GROSS PROV. PRODUCT AT FACTOR COST - REAL)	0.01	0.02	0.03	0.02	0.02	0.02	0.02	0.01	0.01

Table 4.34
National effects of a rise in U.S. interest rates, assuming a managed exchange rate
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
GROSS NATIONAL PRODUCT	-0.17	-0.08	-0.09	0.01	0.05	0.14	0.16	0.17	0.16
IMPLICIT PRICE DEFLATOR FOR GNP	-0.11	-0.02	0.01	0.17	0.31	0.46	0.54	0.58	0.60
REAL GROSS NATIONAL PRODUCT	-0.06	-0.06	-0.10	-0.16	-0.25	-0.32	-0.38	-0.41	-0.44
EXPENDITURE ON PERSONAL CONSUMPTION	-0.02	-0.06	-0.08	-0.13	-0.15	-0.19	-0.22	-0.26	-0.30
EXPENDITURE BY GOVERNMENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INVESTMENT EXPENDITURE	-0.66	-0.79	-1.01	-1.00	-0.98	-1.00	-1.04	-1.11	-1.15
RESIDENTIAL CONSTRUCTION	-0.98	-1.27	-1.58	-1.59	-1.41	-1.29	-1.00	-0.84	-0.67
NON-RESIDENTIAL AND MACH. & EQUIP.	-0.58	-0.66	-0.85	-0.85	-0.87	-0.94	-1.05	-1.17	-1.25
EXPORTS	0.17	0.38	0.40	0.33	0.16	-0.01	-0.15	-0.25	-0.27
IMPORTS	-0.20	-0.20	-0.21	-0.19	-0.07	-0.09	-0.11	-0.20	-0.21
CAPACITY UTILIZATION RATE *	-0.00	0.00	-0.00	0.00	-0.00	-0.00	-0.00	-0.00	-0.00
UNEMPLOYMENT RATE *	0.03	0.06	0.06	0.08	0.07	0.10	0.11	0.14	0.15
EMPLOYMENT	-0.06	-0.10	-0.09	-0.13	-0.11	-0.16	-0.18	-0.23	-0.24
NARROWLY DEFINED MONEY SUPPLY, M1	-2.12	-0.67	-2.41	-0.90	-2.36	-1.15	-1.95	-1.14	-1.73
FINANCE CO. 90-DAY PAPER RATE *	0.56	0.16	0.63	0.24	0.65	0.34	0.56	0.35	0.50
INDUSTRIAL BOND RATE *	0.17	0.38	0.50	0.67	0.63	0.76	0.69	0.73	0.65
CONSUMER PRICE INDEX	-0.07	0.00	0.03	0.14	0.24	0.35	0.40	0.44	0.46
AVERAGE ANNUAL WAGES AND SALARIES	-0.09	-0.07	-0.10	-0.02	0.02	0.12	0.14	0.16	0.12
PRODUCTIVITY CHANGE (GDP/EMPLOYEE)	-0.02	-0.01	-0.07	-0.11	-0.20	-0.24	-0.27	-0.27	-0.28
EXCHANGE RATE (US $/CDN $)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TERMS OF TRADE (PX/PM)	-0.15	-0.13	-0.12	0.01	0.17	0.29	0.36	0.38	0.39
BALANCE ON CURRENT ACCOUNT ($ MILL) *	277	635	791	965	835	871	858	1021	1130
CHANGE IN FOREIGN RESERVES ($ MILL) *	-1	2	1	0	-1	-3	-2	0	0
CONSOLIDATED GOVERNMENT BALANCE ($ MILL) *	-147	166	318	732	914	1184	1261	1449	1598
PERSONAL SAVINGS RATE (%) *	-0.05	-0.07	-0.10	-0.12	-0.13	-0.14	-0.13	-0.14	-0.14
NOMINAL AFTER-TAX CORPORATE PROFITS	-0.46	0.13	-0.15	-0.01	-0.36	-0.50	-0.71	-0.76	-0.73
REAL PERSONAL DISPOSABLE INCOME	-0.01	-0.10	-0.12	-0.19	-0.23	-0.26	-0.30	-0.33	-0.39

* See note to Table 4.10.

Table 4.35
Effects on Ontario of a rise in U.S. interest rates, assuming a managed exchange rate
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
PROVINCIAL GROSS DOMESTIC PRODUCT	-0.20	-0.15	-0.19	-0.12	-0.05	-0.03	0.00	-0.02	-0.04
REAL PROVINCIAL GDP AT FACTOR COST	-0.08	-0.12	-0.18	-0.28	-0.35	-0.45	-0.51	-0.57	-0.60
DEFLATOR, PROV'L GDP AT FACTOR COST	-0.13	-0.04	-0.02	0.14	0.29	0.44	0.52	0.56	0.58
REAL PERSONAL DISP. INCOME PER CAP.	-0.01	-0.10	-0.12	-0.20	-0.24	-0.28	-0.33	-0.38	-0.45
ANNUAL WAGES & SALARIES PER EMPLOYEE	-0.08	-0.06	-0.09	-0.02	0.01	0.12	0.14	0.16	0.12
GDP AT FACTOR COST PER EMPLOYEE	-0.03	-0.01	-0.08	-0.12	-0.21	-0.25	-0.28	-0.29	-0.30
LABOUR FORCE	-0.01	-0.02	-0.02	-0.03	-0.03	-0.04	-0.05	-0.06	-0.06
EMPLOYMENT	-0.06	-0.11	-0.10	-0.15	-0.14	-0.20	-0.23	-0.28	-0.30
UNEMPLOYMENT RATE (%) *	0.04	0.08	0.08	0.11	0.10	0.15	0.17	0.21	0.22
REAL DOMESTIC PRODUCT - MANUFACTURING	-0.10	-0.22	-0.30	-0.48	-0.61	-0.81	-0.91	-1.02	-1.09
RDP - GOODS-PRODUCING INDUSTRIES	-0.13	-0.22	-0.31	-0.44	-0.55	-0.71	-0.81	-0.90	-0.95
RDP - SERVICE INDUSTRIES	-0.06	-0.07	-0.13	-0.20	-0.26	-0.34	-0.39	-0.44	-0.46

* See note to Table 4.10.

Table 4.36
Effects of a rise in U.S. interest rates on Ontario's real domestic product by industry, assuming a managed exchange rate
(percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
1 AGRICULTURE, FISHING & TRAPPING	0.01	-0.02	-0.06	-0.16	-0.24	-0.38	-0.45	-0.53	-0.56
2 FORESTRY	-0.11	-0.14	-0.21	-0.32	-0.41	-0.57	-0.66	-0.75	-0.79
3 MINERAL FUEL MINES & WELLS	-0.00	-0.06	-0.13	-0.27	-0.42	-0.59	-0.67	-0.75	-0.81
4 OTHER MINES & QUARRIES	-0.12	-0.15	-0.24	-0.37	-0.51	-0.72	-0.83	-0.95	-1.01
5 FOOD, FEED, BEVERAGES & TOBACCO	-0.01	-0.05	-0.09	-0.17	-0.23	-0.32	-0.37	-0.42	-0.46
6 TEXTILES & CLOTHING	0.05	-0.08	-0.13	-0.29	-0.43	-0.57	-0.66	-0.73	-0.81
7 WOOD & FURNITURE	-0.17	-0.21	-0.29	-0.39	-0.47	-0.62	-0.71	-0.80	-0.84
8 PAPER, PRINTING & ALLIED INDUSTRIES	-0.02	-0.05	-0.10	-0.21	-0.31	-0.47	-0.56	-0.65	-0.69
9 PRIMARY METAL & METAL FABRICATING	-0.16	-0.26	-0.36	-0.52	-0.66	-0.87	-0.99	-1.11	-1.17
10 MOTOR VEHICLES & PARTS	-0.14	-0.25	-0.38	-0.62	-0.94	-1.31	-1.62	-1.86	-2.08
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	-0.20	-0.54	-0.61	-0.95	-1.02	-1.29	-1.35	-1.51	-1.60
12 ELECTRICAL PRODUCTS	-0.22	-0.48	-0.57	-0.79	-0.83	-0.99	-1.04	-1.13	-1.19
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	-0.01	-0.07	-0.14	-0.28	-0.41	-0.56	-0.65	-0.73	-0.78
14 NON-METALLIC MINERAL PRODUCTS	-0.38	-0.42	-0.62	-0.68	-0.80	-0.92	-1.00	-1.10	-1.14
15 OTHER MANUFACTURING INDUSTRIES	0.11	-0.11	-0.17	-0.39	-0.53	-0.69	-0.74	-0.80	-0.87
TOTAL MANUFACTURING	-0.10	-0.22	-0.30	-0.48	-0.61	-0.81	-0.91	-1.02	-1.09
16 CONSTRUCTION	-0.56	-0.55	-0.77	-0.71	-0.77	-0.79	-0.84	-0.89	-0.91
17 ELECTRIC POWER, WATER & GAS UTILITIES	0.03	0.08	0.07	0.01	-0.03	-0.09	-0.14	-0.18	-0.21
TOTAL GOODS-PRODUCING INDUSTRIES	-0.13	-0.22	-0.31	-0.44	-0.55	-0.71	-0.81	-0.90	-0.95
18 TRANSPORTATION & STORAGE	0.20	0.46	0.52	0.46	0.40	0.36	0.32	0.27	0.27
19 COMMUNICATION	-0.06	-0.08	-0.14	-0.22	-0.29	-0.37	-0.42	-0.47	-0.50
20 TRADE	-0.12	-0.19	-0.24	-0.33	-0.36	-0.45	-0.51	-0.58	-0.62
21 FINANCE, INSURANCE & REAL ESTATE	-0.09	-0.13	-0.20	-0.27	-0.33	-0.40	-0.43	-0.48	-0.50
22 OTHER SERVICE INDUSTRIES	-0.07	-0.09	-0.16	-0.23	-0.31	-0.39	-0.44	-0.48	-0.50
TOTAL SERVICE INDUSTRIES	-0.06	-0.07	-0.13	-0.20	-0.26	-0.34	-0.39	-0.44	-0.46
23 GOVERNMENT SECTOR	0.02	-0.00	-0.01	-0.04	-0.06	-0.08	-0.10	-0.10	-0.10
TOTAL: ALL SECTORS (GROSS PROV. PRODUCT AT FACTOR COST - REAL)	-0.08	-0.12	-0.18	-0.28	-0.35	-0.45	-0.51	-0.57	-0.60

5
The impact of the September 1981 Energy Accord

The simulations in Chapter 4 show the sensitivity of the Canadian and Ontario economies to some shocks or policy changes that might occur in the future. This chapter tries to estimate some of the effects on Ontario of a past 'shock', namely, the Ottawa-Alberta Energy Accord concluded on 1 September 1981.

First, it must be stressed what the impacts of the Accord have been measured against. They have not been measured against a simple extrapolation of the October 1980 National Energy Program (NEP), with the resulting impasse between Alberta and Ottawa continuing year after year. Few analysts believed in 1981 that this state of affairs could last. Instead, the impacts of the Accord are measured against what was seen in mid-1981 as a likely outcome of the Ottawa-Alberta negotiations.[1] Examining the effects of the 'anticipated' settlement against what finally occurred gives some sense of other ways in which the negotiations could have turned out and what the effect of the most likely alternatives would have been.

The estimated effects of the Accord (vis-à-vis the anticipated settlement) are summarized in Table 5.1; more details are in Table 5.4 at the end of the chapter.[2] Clearly, some features of the Accord were anticipated more accurately than others - perhaps an indication that the negotiators faced fewer alternatives in the former areas. For example, the blended (refiners'

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[1] Specifically, the impacts of the Accord are measured against basic elements of an agreement projected by DRI Canada in June 1981 to occur later in that year or in 1982.

[2] Readers studying the impacts and nature of the Accord should see Scarfe and Wilkinson (1981) for a lucid and detailed review.

TABLE 5.1
Unanticipated elements of the Energy Accord: summary

	Annual average	
	1982-5	1986-90
	Percentage change	
Wellhead price, conventional crude ('old')	22.0	22.9
Refiners' acquisition price (blended price)	12.9	14.1
Natural gas, Toronto Citygate price	-2.3	-14.5
Petroleum production	0.4	1.0
Domestic demand for petroleum	-0.8	-3.0
Oil imports	-4.0	-20.0
Federal revenues and expenditures		
Petroleum Compensation Charge	-14.8	-23.4
Total subsidies	-9.1	-36.4
Tax on gas and gas liquids	-36.9	-37.1
Petroleum and Natural Gas Revenue Tax (PGRT) (includes the IORT - a 50 per cent tax on difference of new wellhead and NEP price)	152.0	80.1
Provincial royalties	15.2	7.3
	Change in $ millions	
Corporate Revenues		
Pre-tax	3026	2228
Post-tax	-1016	-1379

NOTE: All figures calculated as changes or percentage changes from pre-Accord projections to post-Accord projections.

acquisition) price of petroleum was relatively well foreseen; it averages only 13 to 14 per cent above anticipated levels throughout the 1980s. Thus, relatively little unanticipated consumer-price inflation stems directly from the Accord. Moreover, the price to consumers of natural gas was actually over-predicted by an increasing extent for each year of the decade. (Recall that one feature of the Accord was an attempt to 'twist' the relative prices of petroleum and gas.)

The actual increases in the wellhead price and in the price for 'new' conventional crude result in a blended price somewhat higher than the one that had been expected.[3] The primary difference in the post-Accord projection is in the Petroleum Compensation Charge, which generates lower-than-anticipated revenues.

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[3] Note that the pre-Accord model's assumptions about world petroleum prices project less of a rise than is foreseen in the Accord. The assumptions

Higher-than-expected prices to consumers and for petroleum from new production are projected to result in some additional domestic output and in a further decline in domestic consumption; the net effect is to reduce imports by 20 per cent vis-à-vis what was foreseen pre-Accord for the latter half of the decade.

The biggest surprise in the Accord appears to have been the amount of additional revenue allocated to the federal government, instead of the energy corporations, through the increased Petroleum and National Gas Revenue Tax (PGRT) and the Incremental Oil Revenue Tax (IORT).[4] Indeed, this result was so much of a surprise that despite the higher-than-anticipated petroleum price increases, post-tax corporate profits in oil and gas are actually lower - by over $1 billion a year - than the pre-Accord projections.

These price increases are projected to have other consequences. An oil or gas price increase removes purchasing power (decreases effective demand) from the hands of consumers. It may also squeeze profits - and reduce investment - in nonenergy industries that use oil and gas as major inputs. When the funds go to the corporate sector, one can safely assume that at least most of them will be reinvested and so re-enter the income-expenditure cycle as demand - albeit of another type. But when the funds are collected by government in a political atmosphere that stresses deficit reductions, such as is forecast for the 1980s, one must assume that they do not get cycled back into demand. Thus, reduction in aggregate demand leads to reduced output - although it also softens the inflationary pressure of the oil-price increases. Moreover, removing a source of internal financing from the energy sector puts into doubt the size of the increase in petroleum output projected for the 1980s - although our model assumes no major reduction in output as an effect of the Accord.

Notice that although the Accord extends only through 1986, our model carries all its major elements forward through 1990; the single exception is that for 1987-90 about $1 billion per year is retransferred from the federal

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were approximately those outlined in Chapter 2.

[4] The latter is a 50 per cent tax on the difference between the wellhead price of conventional crude agreed to under the Accord and the schedule previously established under the NEP in the October 1980 budget.

government to the corporations - partly because the federal deficit is projected to be much reduced then and partly because it was felt that the corporations would need additional revenues to continue the development of energy projects.[5]

These and other effects of the unanticipated elements of the Accord on the national and Ontario economies are summarized in Tables 5.2 and 5.3 respectively; greater detail is in Tables 5.5 through 5.9 at the end of the chapter.

At the national level, reduced consumption and investment reduce real GNP by about 0.3 per cent in 1982-5 and 0.9 per cent in 1986-90 - between one and two billion 1971 dollars. The GNP deflator is up in the early part of the decade since higher energy prices are only partly offset by reduced aggregate demand and a slight fall in the exchange rate. By the latter half of the decade, however, the two downward pulls on prices begin to dominate, and they and inflation fall below the levels of the pre-Accord projection. Reduced economic activity raises the unemployment rate by about half a percentage point, and the exchange rate goes up because of reduced domestic demand and reduced petroleum imports.

For Ontario, the effects on real output and on unemployment are somewhat more severe than for the country as a whole, given the assumption that government does not spend its extra revenue. These factors have the most impact on marginal consumer purchases, such as automobiles and appliances, and on real investment, and Ontario has high shares of both types of industries. Moreover, during the 1986-90 period, the appreciation of the Canadian dollar reduces Canadian exports and increases imports, and Ontario is also more vulnerable to these shocks than is the country as a whole.

In closing, it is worth repeating that the adverse effects on real GNP and employment in Canada and Ontario resulting from the unanticipated elements of the Accord are not caused by the additional price increases. Indeed, the price increases are projected to have worthwhile effects in stimulating some additional output and in reducing consumption. Rather, the adverse effects are primarily the result of the allocation and eventual use of the additional revenues generated. Even so, effects on real GNP and employ-

[5] At time of writing, the Alberta government announced a program whereby several billions of dollars would be returned to corporations in the 1982-5 period. This may be something of a recognition that too little was left to the corporations under the Accord.

TABLE 5.2
National effects of unanticipated elements of Accord: summary

	Annual average	
	1982-5	1986-90
Real GNP (% change)	-0.3	-0.9
GNP deflator (% change)	0.6	-0.2
Industrial bond rate (change in % points)	-0.3	-0.7
Unemployment rate (change in % points)	0.4	0.5
Exchange rate (% change)	0.7	1.4
Total government balance (change in $ millions)	2095	1882

NOTE: See note to Table 5.1.

TABLE 5.3
Effects on Ontario economy of unanticipated elements of Accord: summary

	Annual average	
	1982-5	1986-90
Real GDP at factor cost (% change)	-1.1	-1.3
GDP deflator (% change)	0.2	-0.9
Unemployment rate (change in % points)	0.5	0.7
Real domestic product (% change)		
Manufacturing	-1.5	-1.5
Goods-producing industries (including manufacturing)	-1.4	-1.5
Services	-1.1	-1.4

NOTE: See note to Table 5.1.

ment are not necessarily the only factors that should be considered in evaluating policy.

Table 5.4
Effects of the Energy Accord on energy variables (percentage changes from pre-Accord projection, unless otherwise indicated)

PRODUCTION/DEMAND	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PETROLEUM PRODUCTION										
CONVENTIONAL CRUDE (OLD)	-1.03	-6.00	-9.71	-12.71	-17.00	-20.79	-24.99	-29.00	-32.99	-37.00
CONVENTIONAL CRUDE (NEW)[a]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SYNTHETIC	–	–	–	–	–	–	–	–	–	–
TERTIARY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FRONTIER-HIBERNIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL PETROLEUM PRODUCTION	0.0	0.0	0.41	0.49	0.70	0.81	0.95	0.91	0.99	1.10
DOMESTIC DEMAND FOR PETROLEUM	0.0	-0.18	-0.45	-0.93	-1.60	-2.22	-2.64	-3.00	-3.40	-3.88
TOTAL NATURAL-GAS PRODUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DOMESTIC DEMAND FOR NATURAL GAS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DOMESTIC PRICES	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
WELLHEAD PRICE, CONVENTIONAL CRUDE (OLD)	1.00	7.65	19.25	27.71	33.40	27.82	24.76	21.48	20.32	20.13
ENERGY AGREEMENT BASE FOR WELLHEAD PRICE	0.44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
REFINERS' ACQUISITION PRICE (BLENDED PRICE)	0.75	5.78	9.20	15.15	21.63	19.84	13.93	11.38	11.98	13.51
NEW OIL REFERENCE PRICE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OIL IMPORT PRICE	-0.08	-0.43	0.07	-1.16	-1.23	-0.80	-0.00	-1.13	-2.11	-3.16
PRICE FOR NEW CONVENTIONAL CRUDE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PRICE FOR TERTIARY PRODUCTION	0.0	40.94	44.53	45.98	49.53	5.26	-6.27	-4.71	-3.80	-3.79
PRICE FOR FRONTIER-HIBERNIA PRODUCTION	0.0	0.69	3.20	4.23	6.75	5.26	-6.27	-4.71	-3.80	-3.79
PRICE FOR SYNTHETIC-OIL PRODUCTION	1.14	0.69	3.20	4.23	6.75	5.26	-6.27	-4.71	-3.80	-3.79
NETBACK ON NATURAL GAS, DOMESTIC SALES	-0.41	4.87	-9.77	-4.38	-3.63	-9.43	-15.41	-19.67	-22.89	-25.75
NETBACK ON NATURAL GAS, EXPORT SALES	2.13	10.15	10.96	8.46	7.30	6.80	6.78	4.79	3.00	1.22
WEIGHTED NETBACK PRICE - NATURAL GAS	0.97	7.94	2.13	3.29	2.79	-0.26	-3.25	-6.55	-9.17	-11.60
TORONTO CITYGATE PRICE, NATURAL GAS	-0.24	2.81	-6.46	-2.91	-2.49	-6.80	-11.58	-15.23	-18.14	-20.89

[a] Pre-Accord base is zero; see total production

Table 5.4 continued

EXTERNAL TRADE

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
EXCHANGE RATE (CDN$/US$)	-0.08	-0.43	0.07	-1.16	-1.23	-0.80	-0.00	-1.13	-2.11	-3.16
CRUDE-OIL IMPORT PRICE (US$/BBL.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRUDE-OIL IMPORT PRICE (CDN$/BBL.)	-0.08	-0.43	0.07	-1.16	-1.23	-0.80	-0.00	-1.13	-2.11	-3.16
OIL IMPORTS (EX SWAPS) (MILL.BBL.)	0.0	-0.68	-3.07	-4.97	-7.36	-9.18	-12.24	-24.38	-27.49	-27.18
OIL IMPORTS (CON.$MILL)	-0.08	-1.00	-2.48	-5.26	-7.36	-8.54	-10.23	-19.02	-22.12	-23.42
NATURAL-GAS EXPORTS (BILL.CU.FT.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OIL EXPORTS (EX SWAPS) (MILL.BBL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OIL & GAS EXPORTS (CON.$MILL)	-0.08	-0.43	0.06	-1.14	-1.22	-0.81	0.01	-1.07	-2.06	-3.14

REVENUES & SUBSIDIES

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
FEDERAL										
PETROLEUM COMPENSATION CHARGE	0.0	0.97	-17.10	-23.39	-19.55	-10.84	-30.88	-32.56	-25.70	-17.14
CANADIAN OWNERSHIP CHARGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PETROLEUM EXPORT TAX	-1.22	-11.57	-18.38	-35.00	0.0	0.0	0.0	0.0	0.0	0.0
TAX ON NAT'L GAS & GAS LIQUIDS	-9.06	-33.57	-36.42	-38.94	-38.46	-37.99	-37.54	-37.09	-36.66	-36.13
PETROLEUM & NAT'L GAS REVENUE TAX (INCLUDES 50% TAX ON NEW WELLHEAD - NEP)	74.98	123.13	151.66	166.57	165.63	143.92	101.36	70.94	49.54	32.21
SUBSIDIES ON PETROLEUM IMPORTS	-1.47	-13.91	-24.04	-43.92	-59.68	-60.80	-48.28	-55.08	-60.22	-63.66
TOTAL IMPORT & PROD'N SUBSIDIES	-0.50	4.94	1.79	-14.68	-28.36	-24.66	-40.91	-39.96	-37.68	-38.52
TOTAL PROVINCIAL ROYALTIES	0.39	10.48	13.60	17.47	18.96	15.15	9.17	5.67	3.94	2.41
GROSS CORP. REVENUES (PRE-TAX)	0.41	8.45	11.50	14.76	16.33	13.22	7.15	3.93	2.84	1.73

ENERGY IMPACTS - SUMMARY TABLE

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
CHANGE IN NET IMPORTS ($MILLIONS)	0	-58	-273	-472	-883	-1306	-1770	-2142	-2635	-3297
REAL INVESTMENT & OUTPUT; EMPLOYMENT ($71 MILLIONS)										
OIL & GAS INVESTMENT IN STRUCTURES	-298	-248	-316	-275	-197	-234	-296	-294	-212	-155
OIL & GAS INVESTMENT IN MACH&EQUIP	-41	-34	-43	-38	-28	-34	-43	-43	-31	-23
REAL OUTPUT; OIL & GAS SECTOR	0	0	5	6	7	8	10	11	12	13
EMPLOYMENT; OIL & GAS SECTOR	0	0	0	0	0	0	0	0	1	1
FEDERAL & PROVINCIAL REVENUES, SUBSIDIES ($MILLIONS)										
FEDERAL INDIRECT TAXES	-97	-601	-1871	-2430	-1862	-1464	-2645	-3214	-2896	-2313
FEDERAL OIL & GAS REVENUE TAX	958	1912	3044	3939	4245	4263	3586	3114	2484	1803
FEDERAL SUBSIDIES	-17	190	79	-697	-1508	-1418	-2647	-3134	-3423	-4167
PROVINCIAL ROYALTIES	24	782	1301	1965	2304	2123	1560	1177	938	643
FEDERAL CAPITAL ASSISTANCE	-89	-570	-825	-937	-937	-937	-937	-937	-937	-937
PROVINCIAL CAPITAL ASSISTANCE	90	692	977	1123	1157	1192	1228	1265	1304	1346
CORPORATE SECTOR ($MILLIONS)										
OIL & GAS SECTOR REVENUES PRE-TAX	59	1424	2482	3738	4461	4125	2641	1859	1516	1000
OIL & GAS SECTOR REVENUES AFTER-TAX	-914	-844	-1182	-1135	-899	-1169	-1605	-1719	-1346	-1053
EXTRA NON-ENERGY PROFIT	0	0	3	4	5	6	8	10	12	14
WAGES & SALARIES FROM OIL & GAS PROD'N	0	0	8	11	15	19	25	30	36	42
CAP CONS ALLOWANCES, OIL & GAS SECTOR	-56	-141	-236	-332	-397	-461	-555	-667	-745	-781
FOREIGN DIRECT INVESTMENT IN OIL & GAS	0	0	0	0	0	0	0	0	0	0
CORP. BOND ISSUES ABROAD FOR OIL & GAS	-82	-76	-106	-102	-80	-105	-144	-154	-121	-94

Table 5.5
National effects of the Energy Accord
(percentage changes from pre-Accord projection)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
GROSS NATIONAL PRODUCT	-0.29	-0.19	-0.28	-0.16	-0.41	-0.68	-0.48	-0.47	-1.09	-1.93
IMPLICIT PRICE DEFLATOR FOR GNP	-0.01	0.34	0.38	0.78	1.02	0.75	0.29	-0.12	-0.66	-1.31
REAL GROSS NATIONAL PRODUCT	-0.28	-0.52	-0.66	-0.94	-1.41	-1.42	-0.77	-0.35	-0.43	-0.63
EXPENDITURE ON PERSONAL CONSUMPTION	-0.11	-0.49	-0.74	-1.15	-1.67	-1.78	-1.45	-1.12	-1.14	-1.32
EXPENDITURE BY GOVERNMENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INVESTMENT EXPENDITURE	-1.36	-1.02	-1.12	-0.91	-0.69	-0.82	-0.70	-0.62	-0.58	-0.49
RESIDENTIAL CONSTRUCTION	0.06	0.35	0.48	0.52	0.54	0.41	0.35	0.53	0.77	0.83
NON-RESIDENTIAL AND MACH. & EQUIP.	-1.68	-1.34	-1.52	-1.29	-1.02	-1.13	-0.95	-0.88	-0.89	-0.77
EXPORTS	-0.05	-0.32	-0.64	-0.98	-1.92	-2.29	-1.22	-0.10	0.03	-0.32
IMPORTS	-0.40	-0.46	-0.88	-1.00	-1.22	-1.89	-2.11	-1.67	-1.33	-1.47
CAPACITY UTILIZATION RATE *	-0.00	-0.00	-0.00	-0.01	-0.01	-0.01	-0.00	0.00	0.00	0.00
UNEMPLOYMENT RATE *	0.07	0.19	0.28	0.42	0.65	0.78	0.60	0.34	0.33	0.44
EMPLOYMENT	-0.12	-0.32	-0.49	-0.70	-1.09	-1.29	-0.99	-0.57	-0.55	-0.72
NARROWLY DEFINED MONEY SUPPLY, M1	0.05	1.10	0.52	1.27	1.18	1.12	1.06	1.00	0.94	0.88
FINANCE CO. 90-DAY PAPER RATE *	-0.08	-0.33	-0.20	-0.37	-0.40	-0.45	-0.39	-0.37	-0.49	-0.67
INDUSTRIAL BOND RATE *	-0.03	-0.07	-0.26	-0.34	-0.47	-0.63	-0.70	-0.75	-0.73	-0.78
CONSUMER PRICE INDEX	-0.02	0.28	0.42	0.66	0.94	0.78	0.50	-0.01	-0.53	-1.08
AVERAGE ANNUAL WAGES AND SALARIES	-0.04	-0.05	-0.03	-0.05	-0.13	-0.30	-0.46	-0.79	-1.35	-2.09
PRODUCTIVITY CHANGE (GDP/EMPLOYEE)	-0.20	-0.28	-0.29	-0.47	-0.69	-0.53	-0.18	-0.24	-0.47	-0.59
EXCHANGE RATE (US $/CDN $)	0.09	0.43	-0.06	1.14	1.24	0.82	-0.01	1.06	2.09	3.24
TERMS OF TRADE (PX/PM)	-0.00	0.57	0.55	1.55	2.18	1.80	0.72	0.77	0.99	1.22
BALANCE ON CURRENT ACCOUNT ($ MILL) *	356	858	1097	2476	2687	3031	3988	6311	7226	8263
CHANGE IN FOREIGN RESERVES ($ MILL) *	0	0	0	0	0	0	0	0	0	0
CONSOLIDATED GOVERNMENT BALANCE ($ MILL) *	549	1333	1564	2581	2902	2115	2189	2315	1648	1143
PERSONAL SAVINGS RATE (&) *	-0.02	0.05	0.20	0.42	0.60	0.65	0.57	0.68	0.77	0.80
NOMINAL AFTER-TAX CORPORATE PROFITS	-4.53	-4.40	-5.50	-6.06	-7.22	-6.82	-3.56	-1.71	-1.75	-2.17
REAL PERSONAL DISPOSABLE INCOME	-0.14	-0.47	-0.57	-0.72	-1.06	-1.14	-0.89	-0.43	-0.35	-0.52

NOTE: * indicates change in levels.

Table 5.6
Effects on Ontario of the Energy Accord
(percentage changes from pre-Accord projection)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PROVINCIAL GROSS DOMESTIC PRODUCT	-0.42	-0.65	-1.17	-1.46	-1,99	-2.11	-1.62	-1.53	-2.34	-3.31
REAL PROVINCIAL GDP AT FACTOR COST	-0.30	-0.62	-0.80	-1.21	-1.90	-1.94	-1.21	-0.81	-1.08	-1.41
DEFLATOR, PROV'L GDP AT FACTOR COST	-0.11	0.20	0.13	0.22	0.05	-0.14	-0.32	-0.59	-1.29	-2.13
REAL PERSONAL DISP. INCOME PER CAP.	-0.14	-0.58	-0.79	-1.10	-1.52	-1.49	-1.12	-0.70	-0.71	-0.95
ANNUAL WAGES & SALARIES PER EMPLOYEE	-0.05	-0.10	-0.13	-0.17	-0.25	-0.36	-0.46	-0.78	-1.36	-2.13
GDP AT FACTOR COST PER EMPLOYEE	-0.20	-0.29	-0.30	-0.48	-0.72	-0.55	-0.18	-0.22	-0.47	-0.59
LABOUR FORCE	-0.02	-0.07	-0.10	-0.14	-0.23	-0.26	-0.18	-0.10	-0.11	-0.15
EMPLOYMENT	-0.10	-0.33	-0.50	-0.74	-1.19	-1.39	-1.04	-0.60	-0.61	-0.82
UNEMPLOYMENT RATE (%) *	0.08	0.25	0.37	0.55	0.90	1.06	0.80	0.47	0.48	0.63
REAL DOMESTIC PRODUCT - MANUFACTURING	-0.33	-0.77	-1.01	-1.43	-2.70	-2.72	-1.37	-0.50	-1.17	-1.85
RDP - GOODS-PRODUCING INDUSTRIES	-0.44	-0.80	-1.06	-1.43	-2.50	-2.55	-1.41	-0.65	-1.17	-1.75
RDP - SERVICE INDUSTRIES	-0.26	-0.60	-0.74	-1.25	-1.79	-1.82	-1.26	-1.04	-1.19	-1.43

NOTE: See note to Table 5.5

Table 5.7
Effects of the Energy Accord on real outputs and deflators by province
(percentage changes from pre-Accord projection)

REAL GDP

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
CANADA	-0.31	-0.60	-0.77	-1.17	-1.77	-1.81	-1.16	-0.80	-1.02	-1.31
NEWFOUNDLAND	-0.33	-0.59	-0.78	-1.15	-1.68	-1.76	-1.18	-0.82	-0.98	-1.25
PRINCE EDWARD ISLAND	-0.27	-0.51	-0.67	-1.00	-1.44	-1.47	-0.98	-0.71	-0.84	-1.05
NOVA SCOTIA	-0.27	-0.52	-0.67	-1.02	-1.50	-1.53	-1.00	-0.70	-0.85	-1.09
NEW BRUNSWICK	-0.32	-0.58	-0.75	-1.12	-1.62	-1.67	-1.11	-0.79	-0.96	-1.22
QUEBEC	-0.31	-0.62	-0.79	-1.20	-1.82	-1.86	-1.21	-0.87	-1.10	-1.40
ONTARIO	-0.30	-0.62	-0.80	-1.21	-1.90	-1.94	-1.21	-0.81	-1.08	-1.41
MANITOBA	-0.28	-0.59	-0.75	-1.18	-1.78	-1.82	-1.19	-0.86	-1.08	-1.37
SASKATCHEWAN	-0.29	-0.60	-0.81	-1.23	-1.87	-1.96	-1.34	-0.94	-1.12	-1.43
ALBERTA	-0.38	-0.60	-0.77	-1.09	-1.53	-1.58	-1.04	-0.72	-0.86	-1.09
BRITISH COLUMBIA	-0.33	-0.58	-0.75	-1.11	-1.63	-1.68	-1.09	-0.73	-0.90	-1.16
YUKON & N.W.T.	-0.26	-0.41	-0.50	-0.71	-0.99	-0.97	-0.54	-0.28	-0.36	-0.51
EXTERNAL & DISCREPANCY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

GDP DEFLATORS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
CANADA	-0.00	0.57	0.88	1.17	1.06	0.68	0.18	-0.25	-0.97	-1.83
NEWFOUNDLAND	-0.09	0.22	0.16	0.29	0.16	-0.04	-0.30	-0.53	-1.23	-2.07
PRINCE EDWARD ISLAND	-0.08	0.18	0.11	0.22	0.09	-0.12	-0.35	-0.65	-1.35	-2.22
NOVA SCOTIA	-0.05	0.33	0.44	0.65	0.55	0.29	-0.06	-0.43	-1.13	-1.98
NEW BRUNSWICK	-0.09	0.23	0.19	0.33	0.20	-0.01	-0.26	-0.56	-1.25	-2.09
QUEBEC	-0.11	0.21	0.15	0.26	0.08	-0.12	-0.31	-0.57	-1.28	-2.13
ONTARIO	-0.11	0.20	0.13	0.22	0.05	-0.14	-0.32	-0.59	-1.29	-2.13
MANITOBA	-0.09	0.26	0.24	0.38	0.21	-0.03	-0.28	-0.57	-1.29	-2.16
SASKATCHEWAN	0.09	0.79	1.29	1.66	1.55	1.04	0.36	-0.22	-1.03	-1.98
ALBERTA	0.51	2.17	4.03	5.05	5.09	3.93	2.16	1.03	0.20	-0.73
BRITISH COLUMBIA	-0.01	0.55	0.82	1.13	1.01	0.65	0.15	-0.26	-0.98	-1.84
YUKON & N.W.T.	0.07	0.50	0.82	1.11	1.11	0.78	0.21	-0.29	-0.91	-1.69

Table 5.8
Effects of the Energy Accord on Ontario's real outputs by industry
(percentage changes from pre-Accord projection)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
1 AGRICULTURE,FISHING & TRAPPING	-0.05	-0.64	-1.08	-1.74	-3.02	-3.20	-2.13	-1.30	-1.66	-2.29
2 FORESTRY	-0.34	-0.54	-0.78	-0.97	-1.72	-1.96	-1.15	-0.29	-0.45	-0.85
3 MINERAL FUEL MINES & WELLS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 OTHER MINES & QUARRIES	-0.40	-0.57	-0.80	-0.97	-1.87	-2.08	-1.03	-0.04	-0.33	-0.84
5 FOOD,FEED,BEVERAGES & TOBACCO	-0.08	-0.72	-1.21	-1.95	-3.22	-3.34	-2.33	-1.67	-2.05	-2.65
6 TEXTILES & CLOTHING	-0.07	-0.51	-0.68	-0.91	-2.04	-2.02	-1.00	-0.21	-0.75	-1.31
7 WOOD & FURNITURE	-0.44	-0.52	-0.74	-0.75	-1.37	-1.64	-0.90	0.03	-0.04	-0.38
8 PAPER,PRINTING & ALLIED INDUSTRIES	-0.18	-0.54	-0.79	-1.21	-2.09	-2.29	-1.44	-0.71	-0.97	-1.45
9 PRIMARY METAL & METAL FABRICATING	-0.49	-0.72	-0.91	-1.13	-2.17	-2.23	-1.02	-0.13	-0.68	-1.26
10 MOTOR VEHICLES & PARTS	-0.35	-1.00	-1.59	-1.91	-4.44	-4.70	-1.75	0.42	-0.70	-2.05
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	-0.36	-0.75	-0.64	-1.13	-2.44	-2.08	-0.51	-0.06	-1.30	-2.11
12 ELECTRICAL PRODUCTS	-0.45	-0.71	-0.67	-0.84	-1.75	-1.55	-0.48	0.06	-0.71	-1.22
13 CHEMICAL,RUBBER & PETROLEUM PRODUCTS	-0.31	-0.89	-1.21	-1.93	-3.14	-3.13	-2.00	-1.39	-1.98	-2.61
14 NON-METALLIC MINERAL PRODUCTS	-1.14	-1.16	-1.42	-1.50	-2.03	-2.10	-1.30	-0.68	-0.94	-1.25
15 OTHER MANUFACTURING INDUSTRIES	-0.14	-0.79	-0.86	-1.44	-2.64	-2.35	-1.26	-0.76	-1.54	-2.14
TOTAL MANUFACTURING	-0.33	-0.77	-1.01	-1.43	-2.70	-2.72	-1.37	-0.50	-1.17	-1.85
16 CONSTRUCTION	-1.47	-1.15	-1.41	-1.17	-1.05	-1.25	-1.02	-0.62	-0.41	-0.35
17 ELECTRIC POWER,WATER & GAS UTILITIES	-0.26	-0.75	-1.07	-1.73	-2.56	-2.65	-1.93	-1.56	-1.84	-2.26
TOTAL GOODS-PRODUCING INDUSTRIES	-0.44	-0.80	-1.06	-1.43	-2.50	-2.55	-1.41	-0.65	-1.17	-1.75
18 TRANSPORTATION & STORAGE	-0.26	-0.60	-0.76	-1.29	-2.01	-2.02	-1.18	-0.82	-1.12	-1.48
19 COMMUNICATION	-0.30	-0.66	-0.79	-1.37	-1.90	-1.90	-1.32	-1.18	-1.39	-1.65
20 TRADE	-0.28	-0.65	-0.92	-1.26	-2.03	-2.19	-1.48	-0.82	-1.00	-1.38
21 FINANCE,INSURANCE & REAL ESTATE	-0.12	-0.33	-0.39	-0.67	-1.11	-1.16	-0.65	-0.34	-0.43	-0.59
22 OTHER SERVICE INDUSTRIES	-0.36	-0.79	-0.91	-1.74	-2.13	-2.09	-1.65	-1.80	-1.92	-2.09
TOTAL SERVICE INDUSTRIES	-0.26	-0.60	-0.74	-1.25	-1.79	-1.82	-1.26	-1.04	-1.19	-1.43
23 GOVERNMENT SECTOR	0.01	-0.03	-0.04	-0.05	-0.09	-0.07	-0.05	0.04	0.15	0.26
TOTAL: ALL SECTORS (GROSS PROV. PRODUCT AT FACTOR COST - REAL)	-0.30	-0.62	-0.80	-1.21	-1.90	-1.94	-1.21	-0.81	-1.08	-1.41

Table 5.9
Effects of the Energy Accord on Ontario's employment by industry
(percentage changes from pre-Accord projections)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
1 AGRICULTURE, FISHING & TRAPPING	0.16	-0.30	-0.71	-1.14	-2.15	-2.49	-1.81	-0.92	-1.02	-1.51
2 FORESTRY	-0.13	-0.27	-0.51	-0.52	-1.11	-1.53	-1.00	0.03	0.12	-0.19
3 MINERAL FUEL MINES & WELLS	0.21	0.28	0.29	0.48	0.70	0.55	0.23	0.34	0.61	0.76
4 OTHER MINES & QUARRIES	-0.17	-0.27	-0.48	-0.47	-1.17	-1.55	-0.83	0.30	0.26	-0.13
5 FOOD, FEED, BEVERAGES & TOBACCO	0.13	-0.44	-0.92	-1.50	-2.63	-2.93	-2.23	-1.44	-1.61	-2.14
6 TEXTILES & CLOTHING	0.14	-0.22	-0.39	-0.44	-1.40	-1.55	-0.82	0.11	-0.20	-0.67
7 WOOD & FURNITURE	-0.21	-0.22	-0.42	-0.25	-0.66	-1.10	-0.68	0.37	0.56	0.36
8 PAPER, PRINTING & ALLIED INDUSTRIES	0.02	-0.28	-0.53	-0.79	-1.53	-1.92	-1.35	-0.45	-0.47	-0.89
9 PRIMARY METAL & METAL FABRICATING	-0.28	-0.44	-0.63	-0.68	-1.55	-1.79	-0.86	0.20	-0.13	-0.64
10 MOTOR VEHICLES & PARTS	-0.16	-0.77	-1.38	-1.55	-4.10	-4.58	-1.70	0.81	-0.19	-1.61
11 MACHINERY & OTH. TRANSPORTATION EQUIP.	-0.07	-0.30	-0.21	-0.39	-1.22	-1.10	-0.18	0.29	-0.46	-0.99
12 ELECTRICAL PRODUCTS	-0.24	-0.44	-0.40	-0.39	-1.15	-1.11	-0.29	0.40	-0.17	-0.61
13 CHEMICAL, RUBBER & PETROLEUM PRODUCTS	-0.09	-0.58	-0.89	-1.42	-2.45	-2.63	-1.82	-1.11	-1.47	-2.03
14 NON-METALLIC MINERAL PRODUCTS	-0.83	-0.78	-1.02	-0.93	-1.25	-1.49	-1.05	-0.33	-0.33	-0.51
15 OTHER MANUFACTURING INDUSTRIES	0.05	-0.58	-0.65	-1.12	-2.29	-2.14	-1.23	-0.55	-1.22	-1.81
TOTAL MANUFACTURING	-0.10	-0.45	-0.67	-0.89	-1.95	-2.14	-1.15	-0.18	-0.60	-1.18
16 CONSTRUCTION	-1.36	-0.95	-1.22	-0.78	-0.45	-0.84	-0.91	-0.36	0.14	0.35
17 ELECTRIC POWER, WATER & GAS UTILITIES	-0.05	-0.46	-0.79	-1.28	-1.96	-2.23	-1.81	-1.34	-1.38	-1.73
TOTAL GOODS-PRODUCING INDUSTRIES	-0.23	-0.49	-0.74	-0.90	-1.74	-1.97	-1.18	-0.28	-0.53	-0.98
18 TRANSPORTATION & STORAGE	-0.04	-0.29	-0.43	-0.76	-1.28	-1.45	-0.96	-0.49	-0.54	-0.79
19 COMMUNICATION	-0.10	-0.41	-0.54	-0.98	-1.35	-1.52	-1.22	-0.97	-0.95	-1.12
20 TRADE	-0.06	-0.34	-0.59	-0.75	-1.32	-1.65	-1.27	-0.50	-0.44	-0.70
21 FINANCE, INSURANCE & REAL ESTATE	0.08	-0.05	-0.11	-0.20	-0.45	-0.66	-0.46	-0.02	0.14	0.11
22 OTHER SERVICE INDUSTRIES	-0.05	-0.30	-0.39	-0.85	-0.99	-1.16	-1.14	-1.20	-1.07	-1.12
TOTAL SERVICE INDUSTRIES	-0.04	-0.29	-0.43	-0.75	-1.06	-1.27	-1.09	-0.82	-0.72	-0.85
23 GOVERNMENT SECTOR	0.00	-0.00	-0.00	-0.01	-0.04	-0.06	-0.07	-0.06	-0.04	-0.04
TOTAL: ALL SECTORS	-0.10	-0.33	-0.50	-0.74	-1.19	-1.39	-1.04	-0.60	-0.61	-0.82

Appendix A
The impact of the Alsands cancellation

This study's macroeconomic models, constructed in February 1982, assume the building of two megaprojects for the production of petroleum from the Alberta oil sands. The textual comments, which were written two months later, follow suit, although Chapter 2 does include a suggestion that this assumption might prove too optimistic. A few weeks after the writing of that chapter, events overtook this book's production schedule; the Alsands project is now cancelled - or, perhaps more likely, postponed for several years.

This appendix uses the FOCUS and PRISM models to examine the impact of the Alsands cancellation - assumed to be permanent - on the Canadian and provincial economies through 1990. The method involves projecting and analysing five scenarios. Some of them present alternative government policy responses to the cancellations; others alter assumptions about the way in which the plant might have been built.

ASSUMPTIONS

Since the Alsands project never reached the detailed planning stage, analysing the effects of its cancellation requires making several assumptions about what its schedule, financing, production, and pricing might have been. One must also be quite clear about certain aspects of the economic environment projected for the rest of the decade.

Profile of Alsands construction and output

Analysts do not agree on the exact profile of what Alsands investment and output would have been. The schedule used here, which is shown in Table A.1, is no more than an approximation. It assumes that investment would have begun in 1982 and peaked in 1986, with the plant coming on stream in 1988 and achieving full output in 1989. Existing estimates of gross expenditures were converted into real investment in millions of 1971 dollars, like the figures that eventually would have appeared in the National Accounts.[1]

Economic environment

The impact of the Alsands cancellation is measured by removing the investment and output profiled in Table A.1 from the base-case projections of Chapters 2 and 3. It is worth reviewing here features of the base case that play an important part in the projected results of the cancellation:

- After the current recession ends, the economy expands at a rate gradually approaching the potential growth rate. This amount of slack is such that Alsands would have crowded out some other investment - that is, the slack is not so great that such a project could have been constructed 'for free' from a large stock of unemployed resources. On the other hand, the crowding out would have been partial; since the base-case projection shows some unemployed resources, Alsands could have been built without displacing an equal amount of other expenditures.
- Real world oil prices remain approximately constant from 1982 to 1985, then rise at about 5 per cent per year.[2] This pessimistic view of world prices means that the 'lost' oil of the cancelled Alsands project is relatively expensive in 1988-90, so the effect on the Canadian balance of payments is larger than would be the case if the oil-price projections were more optimistic. Still, the effects of the cancellation on the balance of payments are of such magnitude that they would be very important even if we assumed considerably lower world oil prices.

[1] The current dollar figure was obtained by multiplying the real estimates by deflators from Chapter 2's base-case projection.

[2] Viewed from mid-1982, this projection may appear overly pessimistic; yet oil-prices projections have been very unreliable in the past, and a conservative estimate of future oil prices seems warranted for a long-run study.

TABLE A.1
Assumed profile of investment in and output from Alsands

	Structures investment	Machinery & equipment investment	Total investment outlays	Output	
	Millions of 1971 $s		Millions of current $s	Mill. bbl. per year	Thous. bbl. per day
1982	120	80	531	-	-
1983	200	140	982	-	-
1984	250	170	1307	-	-
1985	300	200	1699	-	-
1986	350	240	2170	-	-
1987	250	170	1636	-	-
1988	100	70	701	25	68
1989	-	-	-	50	137
1990	-	-	-	50	137

- In the base case, Canada is still importing petroleum in 1990, even *with* Alsands production. The cancellation of the project means importing additional oil - or adopting crash conservation or rationing measures. Even if the country were to achieve self-sufficiency by the end of the decade, the cancellation would affect the balance of payments so long as any production beyond domestic needs could be exported at world prices. The Alsands cancellation would not affect our balance of payments late in the decade only in the unlikely eventuality that Canada were self-sufficient when the plan was projected to begin production *and* that no export markets were then available.

Psychological impact

Since Alsands was considered a 'flagship' or 'model' megaproject, its cancellation may have repercussions on business confidence and investment plans that are far greater than would be caused by a similar reduction in less-visible investment or other autonomous expenditure. It is in analysing such effects, however, that macroeconomic models are least useful; one must resort to surveys, casual empiricism, and just plain judgement. To keep the experiment 'clean', no psychologically induced changes in investment - no ripple effects - have been assumed.[3] (Of course, the model still generates normal reactions in investment and other expenditures.) This decision is not intended to imply that the psychological effects are not important. However, it seems best to leave out of the equations what would essentially be a 'judgement call' so as to make clear what the models are saying in themselves.

Monetary response

Clearly, the cancellation of Alsands has an appreciable effect on the Canadian economy, especially during 1988-90 when the country must import the petroleum that would have been supplied by the project. When a shock has a major effect on the economy, it is appropriate to ask what policy response might follow. Many stances would be possible; to keep the analysis manageable, the simulations are confined to two, both involving exchange-rate and monetary policies.[4]

Scenario 1 assumes that the Bank of Canada does not change its monetary policy. It allows interest rates and the exchange rate to adjust to clear their respective markets, and there is no intervention in the foreign-exchange market - that is, the float is 'clean'.

Alternatively, in Scenario 2, the Bank adjusts its monetary policy so as to keep unchanged the exchange rate projected for the 1980s in the base case - that is, the exchange rate is a managed rate. Late in the decade, this stance, of course, requires considerable monetary restriction and raising of interest rates to keep the Canadian dollar from depreciating.

Most likely, the policy stance actually adopted will be somewhere between these two scenarios, with some movement in both the exchange rate and monetary policy. Predicting the exact final mix is difficult, but as we shall see, there is a great deal of room between the two extremes, especially in the 1988-90 period.

[3] The 'extraordinary' impacts of the Alsands cancellation need not all be negative. It may leave room for investment in alternative-energy sources, conservation, and so on.

[4] Of course, the government could also undertake other fiscal or monetary initiatives, including schemes to boost investment in alternative-energy projects or in other sectors of the economy.

Behaviour of prices

Setting an assumption for pricing presents a particular problem since one of the current major controversies in applied macroeconomics concerns the formation of the aggregate price level. One view, loosely associated with the neoclassicists or monetarists, holds that prices are set to clear markets under profit-maximization - at least, in all but the very short run. The other view, loosely associated with the Keynesians or post-Keynesians, holds that prices are set largely by major corporations on the basis of rule-of-thumb mark-ups over costs - at least, in all but the very long run.[5]

Most of the scenarios here assume the mark-up pricing approach. Scenario 3, however, uses the market-clearing price assumption in combination with a floating exchange rate. The cancellation of the project removes some aggregate demand from the base-case projection, so the price level - no matter how it is calculated - tends to fall below the base-case level (that is, the inflation rate is somewhat lower). Under the mark-up model, however, prices are 'stickier' and fall less than under a market-clearing mechanism; the tendency, therefore, is a larger decline in real output and a smaller decline in prices.[6]

Provincial and sectoral effects

To examine the provincial and sectoral effects of the cancellation, FOCUS's national results are supplemented by the PRISM model using a very simple set of assumptions. First, all direct changes caused by the cancellation in the value-added of the construction and nonmetallic minerals industries are placed in Alberta, as is all change in the value-added of the mineral-fuels sector during the simulation years the project would have been in production (1988-90).

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[5] Each side is often willing to concede the other's case, but only in the irrelevant period. The 'mark-up group' insists that the short run is a sufficiently long period to worry about; the 'market-clearing group' suggests that it is not. It is likely that some sectors are closer to one approach and some to the other.

FOCUS cannot reconcile this debate, but it can take it into account - at least in the formation of the aggregate price level - because the model offers both a mark-up price equation and a market-clearing price mechanism. (Unfortunately, an acceptable synthesis of the two does not yet exist.)

[6] Since the output declines in Scenarios 1 and 2 will probably strike most readers as low, it seemed best to use the mark-up rule as standard, leaving market-clearing prices as an alternative. Note, however, that the market-clearing concept is not unimportant; it is implicit in the notion that inflation can be fought effectively with fiscal and monetary restraint that reduces aggregate demand.

Then, all the machinery-and-equipment expenditures that would have been made for Alsands are distributed across industries in approximate proportion to the average distribution of all such expenditures in Canada.[7] All domestic purchases of machinery and equipment would, by assumption, have been fully tradeable or mobile goods. Thus, their supply could be assigned to the various provinces, according to the base case's provincial shares for the appropriate sectors, even though the purchases would all have been put in place in Alberta.[8]

In addition, the assumption is that the import content of machinery and equipment expenditures for Alsands would have been the economy-wide average of 36 per cent. Detailed analysis of the project may suggest that foreign purchases would have made up a smaller percentage of its machinery and equipment. Sensitivity tests on the model suggest, however, the overall macroeconomic results do not greatly depend on alternative import contents. Scenario 4 illustrates this point by lowering the import content of Alsand's machinery and equipment to 20 per cent, while maintaining the other assumptions of Scenario 1.

Sources of financing

Another key factor is the source of the funds the project would have used. The assumption here is that 50 per cent of them would have been borrowed outside Canada, with capital service on the debt postponed until the plant

[7] This is clearly an oversimplification; for example, Alsands might have used more primary-metal products (such as pipe) and less transport machinery than the average project.

[8] This is an oversimplification, but a necessary one. Machinery and equipment industries in Alberta would probably have received more of a boost from Alsands than those in Ontario and Quebec, so the cancellation's impacts on Alberta and the West are probably somewhat understated in the results. Yet it is important to realize how mobile even heavy machinery is, as evidenced from the volume of international trade in such goods. The claim that at least certain sectors of the Ontario economy would have benefited from Alsands (in its requirements for steel, machinery, and so on) was not an empty one.

was in production. Cancellation of the project, therefore, entails a reduction in long-term capital inflows in 1982-8.

To test the sensitivity of the results to this assumption, Scenario 5 assumes instead that there would have been no foreign borrowing for the project. (Of course, capital flows still respond to induced changes in other variables.) It turns out that results are indeed sensitive to the assumed level of foreign borrowing.

SUMMARY OF SCENARIOS

To summarize, the five scenarios are:

- Scenario 1. The profile of the Alsands project incorporates all the points explained in the previous sections, including 50 per cent of the required capital being borrowed from foreign sources and a 36-per-cent import content for machinery and equipment. Mark-up pricing is used. On cancellation of the project, the exchange rate remains fully flexible, and the Bank of Canada holds its money-supply targets at base-case levels.
- Scenario 2. All assumptions are the same as in Scenario 1, except the Bank of Canada fixes the exchange rate to the base-case level in each year by altering the money supply.
- Scenario 3. All assumptions are the same as in Scenario 1, except for the use of a market-clearing price mechanism.
- Scenario 4. All assumptions are the same as in Scenario 1, except the import content of machinery and equipment for Alsands would have been 20 per cent.
- Scenario 5. All assumptions are the same as in Scenario 1, except the project would have used no foreign borrowing; secondary, induced changes in capital flows are still permitted.

RESULTS: THE CANADIAN ECONOMY

Summary results for the Alsands cancellation, vis-à-vis the base case, are presented in Tables A.2 through A.6; each table corresponds to one of the five scenarios. In discussing the results, it is useful to consider separately the construction phase of the project (1982-7) and the production phase (1988-90).

TABLE A.2
The national economy and the Alsands cancellation: Scenario 1 (percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Gross national product	-0.10	-0.16	-0.19	-0.21	-0.21	-0.09	0.50	1.69	2.47
Implicit price deflator for GNP	0.02	0.01	0.00	0.00	0.02	0.01	0.35	1.06	1.89
Real gross national product	-0.12	-0.17	-.020	-0.22	-0.22	-0.10	0.15	0.62	0.57
Personal consumption	-0.04	-0.07	-0.09	-0.11	-0.12	-0.09	-0.28	-0.15	0.06
Expenditure by governments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Investment expenditure	-0.71	-1.11	-1.22	-1.31	-1.39	-0.75	-0.05	0.38	0.26
Residential construction	-0.00	-0.00	0.04	0.04	0.04	0.04	-0.45	-1.13	-1.24
Nonresidential and M & E	-0.86	-1.33	-1.48	-1.58	-1.66	-0.89	0.01	0.63	0.48
Exports	0.00	0.04	0.06	0.07	0.10	0.12	0.42	1.42	1.32
Imports	-0.24	-0.42	-0.46	-0.51	-0.55	-0.32	-0.74	-0.81	-0.39
Capacity utilization rate*	-0.00	-0.00	-0.00	-0.00	-0.00	0.00	0.00	0.00	0.00
Unemployment rate	0.03	0.05	0.06	0.07	0.06	0.03	-0.05	-0.27	-0.36
Employment	-0.04	-0.09	-0.10	-0.11	-0.11	-0.05	0.08	0.44	0.60
Narrowly defined money supply (M1)	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
Finance co. 90-day paper rate*	-0.02	-0.04	-0.04	-0.05	-0.05	-0.02	0.11	0.37	0.54
Industrial bond rate	-0.01	-0.03	-0.04	-0.05	-0.06	-0.06	0.13	0.28	0.39
Consumer price index	0.02	0.00	-0.02	-0.00	0.01	0.01	0.90	1.82	2.29
Average annual wages and salaries	0.00	-0.01	-0.04	-0.06	-0.06	-0.06	0.40	1.33	2.26
Productivity change (GDP/employee)	-0.08	-0.08	-0.09	-0.11	-0.12	-0.05	0.12	0.29	0.08
Exchange rate (US $/CDN $)	-0.10	-0.12	-0.11	-0.16	-0.20	-0.12	-2.69	-4.15	-3.79
Terms of trade (PX/PM)	-0.06	-0.09	-0.08	-0.11	-0.14	-0.09	-1.59	-2.56	-1.95
Balance on current account ($ mill)*	221	515	686	822	1038	801	-1217	-1275	-1110
Change in foreign reserves ($ mill)*	0	0	0	0	0	0	0	0	0
Consolidated govt balance ($ mill)*	-167	-312	-373	-424	-459	-204	1555	3492	3353
Personal savings rate (%)*	-0.03	-0.02	-0.01	-0.02	-0.02	0.00	-0.20	-0.13	0.09
Nominal after-tax corporate profits	-0.33	-0.18	0.12	0.36	0.63	1.19	2.24	3.60	2.63
Real personal disposable income	-0.08	-0.09	-0.11	-0.14	-0.15	-0.09	-0.50	-0.27	0.20

NOTE: * indicates change in levels.

TABLE A.3
The national economy and the Alsands cancellation: Scenario 2 (percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Gross national product	-0.16	-0.25	-0.30	-0.35	-0.39	-0.24	-0.91	-1.52	-1.39
Implicit price deflator for GNP	-0.00	-0.02	-0.05	-0.07	-0.08	-0.09	-0.36	-0.58	-0.58
Real gross national product	-0.15	-0.22	-0.25	-0.28	-0.30	-0.15	-0.56	-0.94	-0.82
Personal consumption	-0.04	-0.09	-0.11	-0.14	-0.16	-0.14	-0.23	-0.39	-0.42
Expenditure by governments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Investment expenditure	-0.79	-1.17	-1.32	-1.44	-1.54	-0.78	-2.17	-3.23	-2.57
Residential construction	-0.12	-0.04	-0.10	-0.14	-0.16	0.06	-3.04	-4.38	-3.99
Nonresidential and M & E	-0.93	-1.41	-1.57	-1.70	-1.80	-0.93	-2.03	-3.05	-2.36
Exports	-0.02	-0.02	-0.00	0.02	0.04	0.08	0.02	-0.03	-0.10
Imports	-0.24	-0.40	-0.47	-0.50	-0.53	-0.31	-0.45	-0.51	-0.49
Capacity utilization rate*	-0.00	-0.00	-0.00	-0.00	-0.00	0.00	-0.00	-0.00	-0.00
Unemployment rate	0.04	0.07	0.08	0.09	0.09	0.05	0.15	0.26	0.26
Employment	-0.06	-0.12	-0.14	-0.15	-0.16	-0.08	-0.24	-0.42	-0.43
Narrowly defined money supply (M1)	-0.07	-0.17	-0.16	-0.24	-0.28	-0.30	-3.71	-6.62	-1.01
Finance co. 90-day paper rate*	-0.01	-0.01	-0.02	-0.01	-0.01	-0.02	0.92	1.48	-0.06
Industrial bond rate	-0.01	-0.02	-0.02	-0.02	-0.02	-0.04	0.42	0.82	1.23
Consumer price index	-0.02	-0.04	-0.07	-0.08	-0.09	-0.07	-0.09	-0.11	-0.11
Average annual wages and salaries	-0.02	-0.06	-0.10	-0.15	-0.18	-0.19	-0.32	-0.48	-0.41
Productivity change (GDP/employee)	-0.09	-0.11	-0.11	-0.13	-0.15	-0.06	-0.35	-0.46	-0.27
Exchange rate (US $/CDN $)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Terms of trade (PX/PM)	-0.01	-0.03	-0.06	-0.08	-0.10	-0.09	-0.77	-1.32	-1.27
Balance on current account ($ mill)*	252	495	642	789	982	697	- 779	-2543	-2993
Change in foreign reserves ($ mill)*	0	0	0	-1	0	1	1	1	0
Consolidated govt balance ($ mill)*	-223	-388	-472	-565	-661	-297	-2006	-3917	-3392
Personal savings rate (%)*	-0.03	-0.02	-0.03	-0.03	-0.03	-0.01	-0.18	-0.25	0.18
Nominal after-tax corporate profits	-0.48	-0.37	0.09	0.14	0.35	1.08	-1.68	-3.87	-3.64
Real personal disposable income	-0.07	-0.12	-0.14	-0.18	-0.20	-0.16	-0.26	-0.50	0.51

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* See note to Table A.2

TABLE A.4

The national economy and the Alsands cancellation: Scenario 3 (percentage change from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Gross national product	-0.19	-0.34	-0.50	-0.62	-0.69	-0.52	0.37	2.14	3.15
Implicit price deflator for GNP	-0.10	-0.23	-0.39	-0.52	-0.63	-0.59	0.09	1.48	2.50
Real gross national product	-0.09	-0.11	-0.11	-0.10	-0.06	0.07	0.28	0.65	0.64
Personal consumption	-0.03	-0.05	-0.07	-0.10	-0.11	-0.08	-0.29	-0.17	0.14
Expenditure by governments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Investment expenditure	-0.72	-1.15	-1.30	-1.34	-1.33	-0.56	-0.32	1.00	0.91
Residential construction	0.05	0.16	0.26	0.31	0.33	0.32	-0.31	-1.34	-1.62
Nonresidential and M & E	-0.88	-1.42	-1.62	-1.67	-1.64	-0.71	0.43	1.37	1.30
Exports	0.02	0.14	0.24	0.34	0.47	0.55	0.79	1.55	1.13
Imports	-0.33	-0.55	-0.62	-0.67	-0.69	-0.35	-0.55	-0.31	-0.04
Capacity utilization rate*	-0.00	-0.00	-0.00	0.00	0.00	0.00	0.00	0.01	0.00
Unemployment rate	0.04	0.07	0.09	0.09	0.08	0.02	-0.11	-0.40	-0.49
Employment	-0.06	-0.12	-0.15	-0.16	-0.13	-0.04	0.18	0.66	0.81
Narrowly defined money supply (M1)	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
Finance co. 90-day paper rate*	-0.04	-0.08	-0.11	-0.14	-0.15	-0.12	0.08	0.47	0.69
Industrial bond rate	-0.03	-0.07	-0.11	-0.14	-0.17	-0.16	0.07	0.33	0.43
Consumer price index	-0.08	-0.20	-0.34	-0.44	0.51	0.46	0.72	2.20	2.78
Average annual wages and salaries	-0.03	-0.13	-0.28	-0.42	-0.53	-0.55	0.05	1.40	2.77
Productivity change (GDP/employee)	-0.02	0.01	0.03	0.04	0.05	0.08	0.11	0.07	-0.05
Exchange rate (US $/CDN $)	-0.05	0.01	0.13	0.16	0.18	0.20	-2.59	-4.46	-4.23
Terms of trade (PX/PM)	-0.13	-0.22	-0.28	-0.39	-0.46	-0.40	-1.70	-2.31	-1.61
Balance on current account ($ mill)*	288	657	901	1118	1421	1167	-1054	-1687	-1728
Change in foreign reserves ($ mill)*	0	0	0	0	0	0	0	0	0
Consolidated govt balance ($ mill)*	-263	-467	-606	-655	-643	-90	2465	5535	4450
Personal savings rate (%)*	0.01	0.02	0.03	0.01	0.01	-0.01	-0.30	-0.32	0.09
Nominal after-tax corporate profits	-0.66	-0.53	-0.28	0.14	0.58	1.63	3.70	6.04	3.51
Real personal disposable income	-0.03	-0.04	-0.05	-0.01	-0.12	-0.12	-0.63	-0.48	0.34

*See note to Table A.2.

TABLE A.5
The national economy and the Alsands cancellation: Scenario 4 (percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Gross national product	-0.11	-0.15	-0.16	-0.16	-0.15	-0.04	0.52	1.68	2.45
Implicit price deflator for GNP	0.02	0.03	0.04	0.05	0.08	0.07	0.39	1.07	1.89
Real gross national product	-0.13	-0.18	-0.19	-0.22	-0.23	-0.11	0.13	0.60	0.55
Personal consumption	-0.04	-0.07	-0.09	-0.12	-0.13	-0.10	-0.28	-0.16	0.05
Expenditure by governments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Investment expenditure	-0.71	-1.10	-1.21	-1.30	-1.40	-0.78	-0.11	0.32	0.21
Residential construction	-0.00	-0.02	0.00	-0.01	-0.02	-0.01	-0.47	-1.14	-1.26
Nonresidential and M & E	-0.85	-1.32	-1.46	-1.56	-1.65	-0.92	-0.05	0.55	0.43
Exports	0.00	0.06	0.10	0.11	0.14	0.14	0.42	1.40	1.31
Imports	-0.23	-0.40	-0.45	-0.49	-0.53	-0.31	-0.74	-0.83	-0.41
Capacity utilization rate*	-0.00	-0.00	-0.00	-0.00	-0.00	0.00	0.00	0.00	0.00
Unemployment rate	0.03	0.05	0.06	0.06	0.06	0.03	-0.04	-0.25	-0.35
Employment	-0.05	-0.09	-0.10	-0.11	-0.11	-0.05	0.07	0.42	0.58
Narrowly defined money supply (M1)	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
Finance co. 90-day paper rate*	-0.02	-0.03	-0.03	-0.04	-0.03	-0.01	0.11	0.37	0.54
Industrial bond rate	-0.01	-0.02	-0.04	-0.04	-0.05	-0.05	0.14	0.29	0.39
Consumer price index	0.03	0.03	0.03	0.06	0.08	0.06	0.93	1.82	2.29
Average annual wages and salaries	0.00	0.00	-0.01	-0.01	-0.00	-0.01	0.43	1.34	2.25
Productivity change (GDP/employee)	-0.08	-0.08	-0.09	-0.10	-0.12	-0.05	0.12	0.28	0.08
Exchange rate (US $/CDN $)	-0.13	-0.20	-0.21	-0.28	-0.33	-0.19	-2.70	-4.14	-3.80
Terms of trade (PX/PM)	-0.06	-0.11	-0.12	-0.16	-0.18	-0.11	-1.59	-2.55	-1.96
Balance on current account ($ mill)*	198	475	657	777	988	791	-1223	-1287	-1127
Change in foreign reserves ($ mill)*	0	0	0	0	0	0	0	0	0
Consolidated govt balance ($ mill)*	-165	-296	-339	-381	-429	-228	1464	3376	3281
Personal savings rate (%)*	-0.03	-0.03	-0.02	-0.02	-0.02	0.01	-0.19	-0.13	0.08
Nominal after-tax corporate profits	-0.33	-0.17	0.17	0.38	0.62	1.13	2.12	3.48	2.57
Real personal disposable income	-0.08	-0.11	-0.12	-0.15	-0.16	-0.09	-0.49	-0.28	0.19

* See note to Table A.2.

TABLE A.6

The national economy and the Alsands cancellation: Scenario 5 (percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Gross national product	-0.19	-0.46	-0.64	-0.70	-0.73	-0.48	0.36	1.66	2.56
Implicit price deflator for GNP	-0.02	-0.14	-0.27	-0.36	-0.41	-0.37	0.08	0.89	1.87
Real gross national product	-0.18	-0.32	-0.37	-0.34	-0.31	-0.11	0.28	0.76	0.68
Personal consumption	-0.04	-0.08	-0.14	-0.17	-0.18	-0.19	-0.32	-0.15	0.03
Expenditure by governments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Investment expenditure	-0.76	-1.23	-1.34	-1.33	-1.30	-0.47	0.36	0.81	0.63
Residential construction	0.05	0.14	0.23	0.22	0.24	0.20	-0.38	-1.05	-1.25
Nonresidential and M & E	-0.93	-1.51	-1.66	-1.64	-1.59	-0.59	0.48	1.11	0.91
Exports	-0.07	-0.19	-0.23	-0.13	-0.01	0.12	0.64	1.68	1.54
Imports	-0.17	-0.28	-0.36	-0.39	-0.35	-0.23	-0.67	-0.66	-0.32
Capacity utilization rate*	-0.00	-0.00	-0.00	-0.00	0.00	0.00	0.00	0.01	0.00
Unemployment rate	0.04	0.10	0.14	0.14	0.11	0.05	-0.08	-0.33	-0.42
Employment	-0.07	-0.17	-0.24	-0.23	-0.19	-0.09	0.14	0.55	0.70
Narrowly defined money supply (M1)	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
Finance co. 90-day paper rate*	-0.04	-0.10	-0.14	-0.16	-0.16	-0.11	0.08	0.36	0.56
Industrial bond rate	-0.03	-0.08	-0.12	-0.16	-0.20	-0.18	0.02	0.20	0.36
Consumer price index	-0.06	-0.21	-0.30	-0.35	-0.39	-0.24	0.74	1.73	2.40
Average annual wages and salaries	-0.05	-0.16	-0.32	-0.44	-0.51	-0.46	0.11	1.17	2.23
Productivity change (GDP/employee)	-0.12	-0.17	-0.17	-0.15	-0.16	-0.06	0.16	0.29	0.07
Exchange rate (US $/CDN $)	0.25	0.54	0.56	0.52	0.60	0.10	-2.56	-4.03	-3.90
Terms of trade (PX/PM)	0.08	0.14	0.07	-0.04	-0.05	-0.25	-1.78	-2.72	-2.26
Balance on current account ($ mill)*	239	343	319	415	622	255	-1308	-1437	-1698
Change in foreign reserves ($ mill)*	0	0	0	0	0	0	0	0	0
Consolidated govt balance ($ mill)*	-286	-739	-953	-995	-1074	-400	1722	3691	3778
Personal savings rate (%)*	-0.01	0.00	-0.02	-0.05	-0.04	-0.05	-0.22	-0.12	0.04
Nominal after-tax corporate profits	-0.69	-1.04	-0.60	0.13	0.60	1.78	3.32	4.52	3.56
Real personal disposable income	-0.05	-0.09	-0.19	-0.26	-0.25	-0.27	-0.57	-0.26	0.13

*See note to Table A.2.

TABLE A.7
Real GNP 'multipliers' for the cancellation of Alsands

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
1982	0.84	1.03	0.59	1.85	1.18
1983	0.71	0.91	0.46	0.72	1.29
1984	0.68	0.86	0.39	0.66	1.28
1985	0.65	0.84	0.29	0.64	1.03
1986	0.59	0.80	0.16	0.59	0.82
1987	0.38	0.56	-0.27	0.42	0.43

NOTE: The 'multiplier' is defined in each year as the change from the base-case real GNP divided by the loss of assumed investment (from Table A.1, columns 1 and 2).

The construction phase (1982-7)

It is no surprise that the cancellation of Alsands reduces real GNP in the construction phase. In fact, the surprise may be how little GNP falls (recall that the model assumes no psychological aftershocks). For the various scenarios, Table A.7 shows multipliers[9], the ratios of the changes in real GNP to the 'lost' real investments (the sum of the first and second columns in Table A.1). Virtually all the 'multipliers' are less than unity, indicating that the final effect on real GNP is smaller than the reduction in real investment. (Table A.8 gives a breakdown of the Scenario 1 changes in major real-expenditure components.)

This finding may be less of a surprise to readers familiar with macroeconometric models when they recall that estimates of autonomous-expenditure multipliers have been falling steadily over the years. In the recent versions of FOCUS, for example, only particular policy configurations make government-expenditure multipliers greater than unity even initially, and they almost invariably decay over time. And while most multiplier estimates are done for government expenditures, it is not unreasonable that other types of autonomous expenditures should have similar effects - psychological impacts aside. Like government expenditures, the Alsands investment in its construction phase would not have contributed to the productive capital stock and could

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[9] Strictly speaking, a multiplier should only be calculated for a shock of constant real magnitude, while the Alsands real-investment profile has a hump shape.

TABLE A.8

Components of real GNP and the Alsands cancellation: Scenario 1 (changes from base case in millions of 1971 dollars)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Real gross national product	-166	-241	-284	-326	-347	-159	254	1069	1011
Personal consumption	-34	-56	-78	-103	-118	-88	-281	-158	65
Expenditure by governments	0	0	0	0	0	0	0	0	0
Investment expenditure	-197	-327	-384	-436	-490	-281	-20	162	113
Residential construction	0	0	2	2	2	2	-25	-65	-72
Nonresidential and M & E	-196	-327	-387	-439	-492	-283	5	227	186
Exports	0	14	23	24	36	45	166	575	545
Imports	-90	-164	-184	-212	-241	-148	-355	-402	-199

have crowded out other spending in the financial and the goods markets.

The single greatest cause of the low multipliers here, however, is leakage through foreign trade - not only through changes in prices and exchange rates but also simply through changes in marginal incomes. Granted the relatively small effect of changing the import content of the machinery and equipment that would have gone into Alsands - in Table A.7, the multipliers for Scenario 4 are only slightly above those of Scenario 1. But even a relatively small, 20-per-cent import content would still have meant large purchases of foreign goods. Moreover, even the structural portion of Alsands investment would have had an 11-per-cent import content (mostly from intermediate input). Also important is the fact that the most sensitive consumption items (automobiles and other durables) also have large import components; so do inventories. Examination of the real import results in Tables A.2 through A.6 shows clearly how reduction of the assumed import content tends to mitigate the impact of the Alsands cancellation.

The exchange rate also has important effects on the results. In Scenario 1, the multiplier of the Alsands cancellation is further reduced because the exchange rate falls, boosting exports and further reducing imports. When monetary policy fixes the exchange rate (Scenario 2), the multiplier increases, although it is still held down to some extent by the interest-rate increases required to protect the dollar. Scenario 5 assumes Alsands would have used no foreign borrowing, and with the cancellation the Canadian dollar appreciates by slightly more than half a percentage point. Here the cancellation has no immediate effect on capital flows, but it does reduce imports, both directly and from reduced GNP and a slightly lower price level - hence the appreciation, which in turn, somewhat offsets the cushioning impact of import reduction and serves to reduce exports.

Thus, a comparison of Scenarios 1 and 5 shows that the more a project is financed by foreign borrowing, the less its impact on Canadian real GNP. This conclusion is not at all surprising; indeed, at a still higher level of foreign borrowing, the effect on real GNP would have been virtually zero. Of course, assuming that 50-per-cent foreign financing for a project does not necessarily mean that 50 per cent of its inputs will come from abroad - and this would not have been the case with Alsands. Any borrowed funds that were not spent on imports for the project would have been 'translated' into command over real goods and services - into real goods and service flows - via a movement in the exchange rate, which would have caused shifts from domestic to foreign goods in other expenditure categories, freeing up more domestic resources for the project. Given the assumption that 50 per cent of Alsands would have been financed from abroad, its cancellation means that Canadian expenditures do not have to be switched from domestic production to 'borrowed' foreign goods to free up those resources. The Canadian dollar, therefore, follows a lower path or need not appreciate as much. Under the alternative assumption of no foreign borrowing (Scenario 5), the cancellation means that the Canadian dollar need not depreciate to discourage other importers and encourage exporters to permit the imports Alsands would have required.

Yet as we saw in Table A.5, assuming a lower import content for the project's machinery and equipment (Scenario 4) has relatively little impact on the results. The reason is the offsetting effects of the assumption of 50-per-cent foreign financing. In Scenario 4, the reduced import content means that more of the Alsands investment would have gone directly into demand for domestic products and hence into GNP; thus, one would expect the cancellation to have a greater effect on GNP than in Scenario 1. On the other hand, the assumption of lower imports means that the cancellation entails a smaller reduction in imports to offset the loss of borrowed foreign capital, so the exchange rate tends to fall more in Scenario 4 than in Scenario 1, boosting the economy. (Note, for example, that exports are higher in Scenario 4 than in Scenario 1). The first effect outweighs the second, though only slightly. Thus, we see that when a major project is to be extensively financed by borrowing from foreign sources, its import content may not be a matter of serious concern for the national economy - one way or another, the borrowing of capital abroad must be 'translated' into flows of real goods via imports.[10]

The question of whether Alsands would have crowded out other investments is examined for Scenario 1 in Table A.9. The first column of the table shows the total change in real investment directly caused by the Alsands cancellation. The second column is the final change in real investment; the figure is invariably lower than the first and increasingly so over time. The major contributor to this offset is the energy sector itself. Cancellation of Alsands induces a small depreciation that, given export prices for oil and gas

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[10] Of course, import contents is still important from a sectoral or regional viewpoint.

TABLE A.9
Investment and the cancellation of Alsands: Scenario 1
(changes from base case)

	Millions of 1971 $			
	Alsands investment[a]	Total business investment	Investment in energy sector	Investment in nonenergy sectors
1982	-200	-197	10	- 7
1983	-340	-328	30	-18
1984	-420	-387	50	-17
1985	-500	-439	95	-11
1986	-590	-492	95	3
1987	-420	-284	107	29

[a] See Table A.1, columns 1 and 2.

fixed in U.S.-dollar terms, raises the Canadian-dollar earnings of energy corporations in Canada, even after taxes, and the model assumes that some 90 per cent of these extra earnings are ploughed back into new investment, rather than distributed as dividends. The reaction in the nonenergy sector is different, at least in early years. There, lower interest rates, caused by Alsands being out of the financial market, offer an enticement to invest, but in 1982-5, it is more than offset by reduced real output and profits, which discourage investment. As lower rates persist and profits resume a share of income closer to the base case's, however, investment picks up. So that it can be said that Alsands would have crowded out some private, nonenergy investment by 1986-7.

Next, consider Scenario 3, with its market-clearing prices, in relation to Scenario 1, with its mark-up pricing approach (see Tables A.2 and A.4). The assumption of more flexible prices makes the cancellation of Alsands have a much larger downward impact on the price level in Canada. As a result, Canadian goods are more competitive abroad and imports less attractive, stimulating Canadian production. Moreover, with the Bank of Canada's nominal money-supply targets fixed, a lower price level (and lower nominal GNP) reduces the demand for money relative to the supply and so causes interest rates to fall, also boosting domestic demand. Thus, the assumption of flexible prices much reduces the effects of the Alsands cancellation. Indeed, by 1987, real GNP is back to and even surpasses base-case levels.

Finally, consider the impact of the Alsands cancellation on employment and the unemployment rate. Again, the results may appear small in contrast to expectations: in the worse case - Scenario 5 (Table A.6) - the unemployment rate rises by no more than 0.15 percentage points. Employment falls by a little more than 0.2 per cent in the most seriously affected years (1984-5); in 1985, there is a net loss of about 27,000 jobs. But two factors mitigate the employment and unemployment-rate results. First, the model incorporates a well-established cyclical phenomenon - the 'labour-hoarding' effect. (That is, employment is not immediately reduced in proportion to output; instead, employers accept a productivity decline.) As the real effects gradually worsen for 1982-6 (the missing investment would have had a rising profile during this period), employment adjustment continually lags behind real adjustment and is then caught up in the different disruptions of the production phase. Second, the 'discouraged-worker' effect helps to hold the unemployment rate down. On average, the FOCUS equations show that for every ten jobs lost, four people stop participating in the labour force.

Production phase (1988-90)

According to the base case, Alsands would have begun production by 1988, so from that year on, some domestic oil included in the base case is no longer available in these scenarios. The assumption is that the shortfall must be made up by additional imports purchased at world prices. As shown in Tables A.2 and A.3, the effects of these additional imports vary dramatically in Scenarios 1 and 2. (Results from Scenarios 3, 4, and 5 are not discussed here but can be examined in Tables A.4, A.5 and A.6.)

The increase in oil imports is sizeable enough to have a major impact on the balance of trade. Evaluated at the base-case exchange rate (approximately $0.87 U.S. in 1988-90), the additional imports cost $2.5 billion in 1988, $4.5 billion in 1989, and $5 billion in 1990. Two possible policy responses are examined in the scenarios.

In Scenario 1, the exchange rate is permitted to float freely in response to the increase in imports. The result is a considerable drop in the rate - about 4 per cent below the base case - with effects as might be expected. Real output receives a major boost, so real GNP surges half a percentage point above the base case in 1989-90. Virtually all the increase is in exports and import-reduction; consumption and investment are, if anything, negatively affected. In other words, the depreciation of the dollar gears up the Canadian economy to produce the extra goods and services needed to 'pay' for foreign oil through increased exports and import-substitution. But Canadians get almost none of this increased output in the form of real income. Petroleum is an expensive import. Note in Table A.2 that the loss of Alsands oil moves the terms of trade a full 2 per cent against Canada.

A second effect of the depreciation of the dollar and the increase in real output is a rise in domestic prices. By 1989-90, the inflation rate for the GNP deflator is somewhat more than half a percentage point more than that in the base case - and not all the exchange-rate effects have yet worked through the economy. The inflation effects on the consumer price index are greater but come earlier.

Finally, note that the fall-off of the dollar does not negate all the impact of the additional oil imports on the balance of trade; the current account moves down against the base case by about $1 billion in 1988-90. Higher Canadian interest rates and increased activity induce some long-term capital inflows, and the exchange-rate change results in some short-term flows. Together, they offset the $1 billion decline in the current account.

Scenario 2 assumes an alternative policy response: the Bank of Canada adjusts monetary policy so as to keep the exchange rate from falling by reducing the money supply, raising short-term interest rates and, after a lag, long-term rates as well.[11] The rise in interest rates has the dual effect of stimulating capital inflows and of reducing domestic activity, which reduces imports. In brief, Canadians 'pay for' the extra oil imported from abroad partly by increased borrowing abroad and partly by reducing their demand for other kinds of imports. Table A.3 shows - not surprisingly - that the largest impact of the reduction in demand (through higher interest rates) is on investment of all kinds. Despite lower domestic prices, there is little positive stimulus to exports, even by 1990. Part of the cause is again 'labour hoarding', which reduces labour productivity.[12] A positive side

[11] Table A.3 shows that reductions in M1 and rises in the ninety-day interest rate move back towards base-case levels in 1990. The model probably does not show long-term rates rising as quickly as they would in a situation such as this. But the important point is that they do rise, with effects on capital flows and domestic activity.

[12] Also, in the FOCUS model, many exports are priced in U.S.-dollar terms; only after a long lag are lower Canadian prices translated into an export advantage.

effect of the monetary restriction is a decline in the inflation rate, but it is much less than half a percentage point.

In summary, as Figures A.1, A.2, and A.3 make clear, the effects of the Alsands cancellation, positive and negative, on real GNP of the production phase dwarf those of the construction phase. The same is true of the changes it induces in interest rates, inflation, the exchange rate, and unemployment rates. The lesson is that the oil 'lost' from Alsands - and the response of monetary policy - is probably more important to Canada's macroeconomy than the lost activity of its construction phase.

RESULTS: THE PROVINCIAL ECONOMIES

The basic results of the cancellation of the Alsands project are given in Tables A.10 through A.16 for all the provincial economies, using a comparison of the base case and Scenarios 1, 2, 4, and 5. More detailed results for Ontario and Alberta are in Tables A.17 through A.22 at the end of the chapter. Figures A.4 and A.5 compare the results for real output and unemployment rates in Canada, Ontario, and Alberta under Scenarios 1 and 2. Once again, it is convenient to discuss the construction and production phases separately.

Construction phase (1982-7)

For the most part, the provincial results are qualitatively what one would expect, given the national results. Alberta takes the largest losses in real GDP - somewhat more than 1 per cent of the base-case GDP by 1985-6, when construction would have been most intense. This result shows relatively little variation from scenario to scenario. Alberta suffers both the direct effects of the cancellation of the construction activity and its secondary impact in reduced tertiary-sector growth. The depreciation of the Canadian dollar that occurs in Scenario 1 is of some benefit to Alberta in reducing the impact of the cancellation; additional energy-sector revenues stemming from the depreciation lead to more investment in Alberta - but also elsewhere. The fixed exchange rate of Scenario 2 and the appreciation of Scenario 5 make the outcome for Alberta slightly worse than in Scenario 1.[13]

[13] The greater depreciation in Scenario 4 improves the province's situation a trifle.

Figure A.1
Real GNP and the Alsands cancellation
(percentage changes from base case)

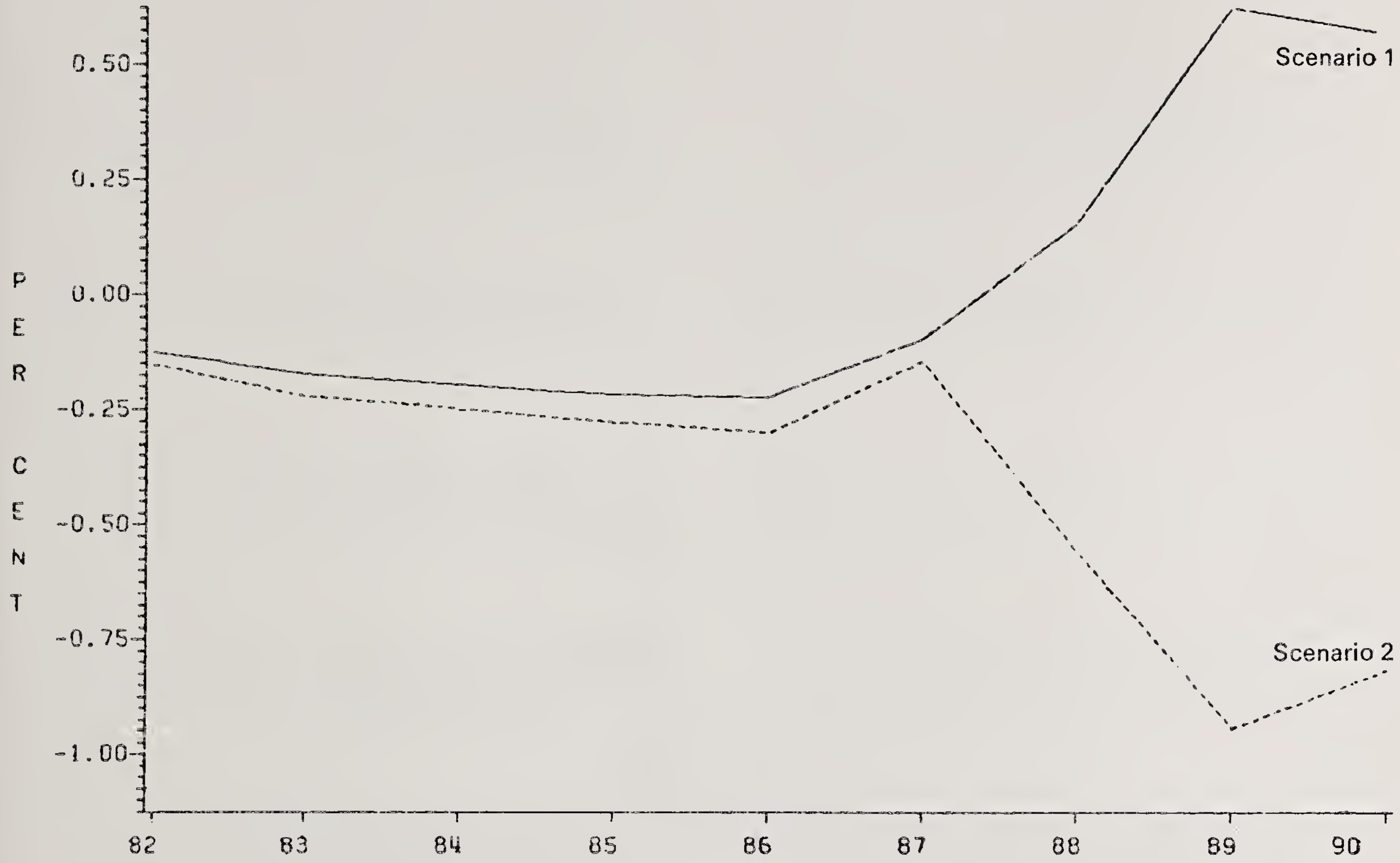


Figure A.2
Bond rates and the Alsands cancellation (changes from base case)

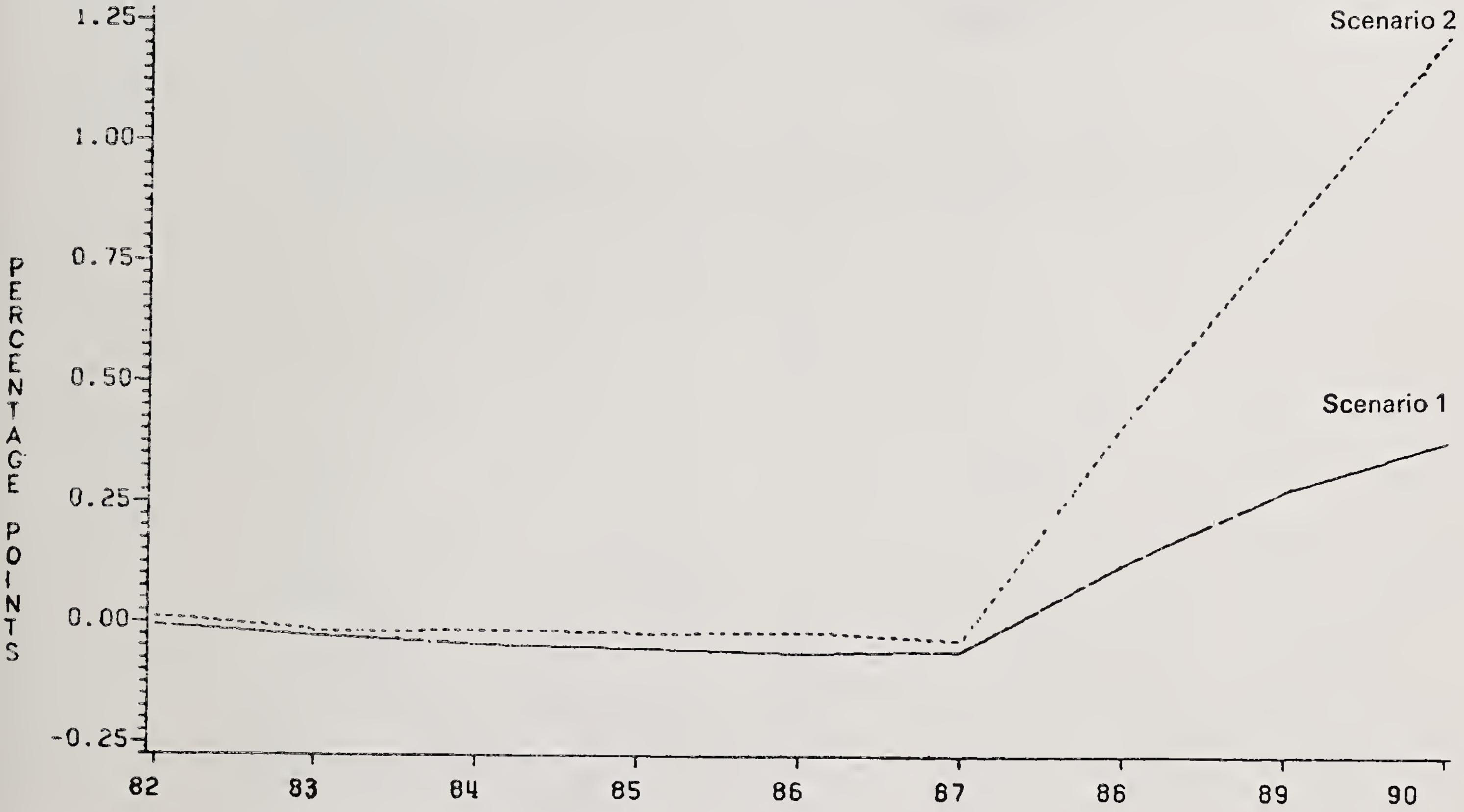
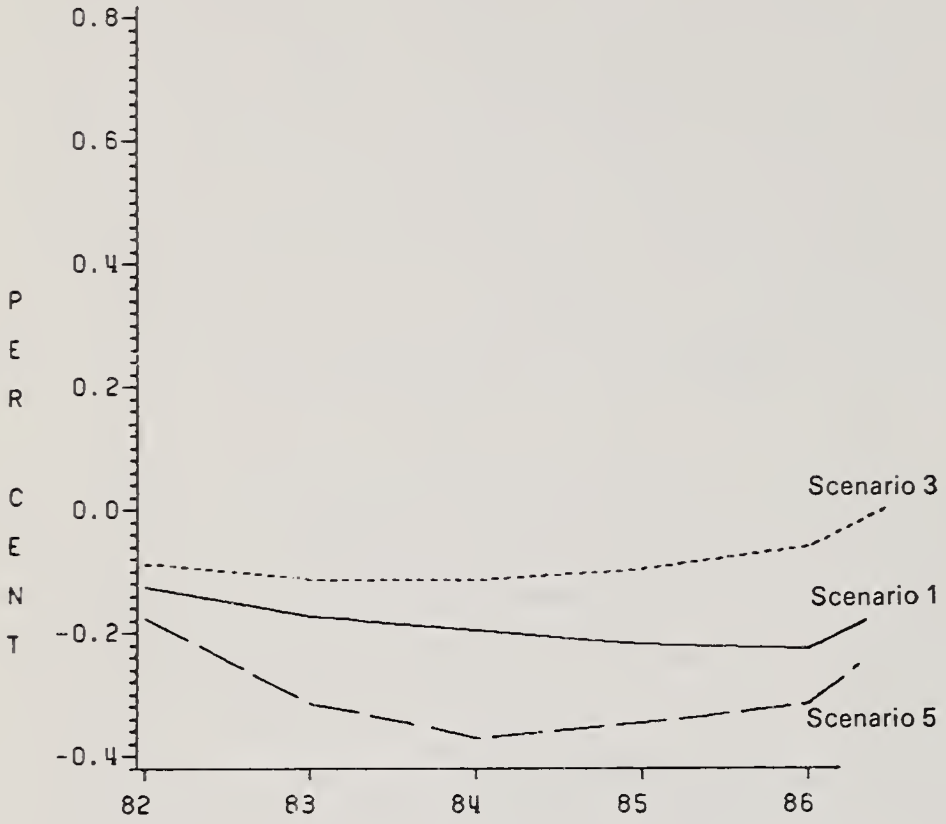


Figure A.3
Real economic activity and the Alsands cancellation
(percentage changes from base case)



The effects of the cancellation on other provinces are all, of course, much smaller than on Alberta. Indeed, the model's percentage changes in GDPs, especially for the smaller provinces, are so tiny that they must be considered impressions at most. One must avoid the temptation to read too much into differences of a few hundredths of a percentage point.

Given that caveat, it is still interesting to note that in Scenario 1, the provinces other than Alberta that are most seriously affected during the early years of the construction phase (1982-4) are Manitoba and British Columbia - and not Ontario. This is partly the result of those provinces' tertiary-sector declines, which are relatively greater than Ontario's. In 1985-6, however, Ontario does emerge as the province most affected after Alberta. Quebec, Manitoba, and B.C. are together at a slightly lower level of impact.

Note that in Scenario 2 and Scenario 5, the reduction in real GDP is relatively more severe for the provinces other than Alberta. In Scenario 5, Ontario also emerges as the second-most-affected province as early as 1982. The 'worst' drop in GDP for any province other than Alberta is a loss of 0.37

TABLE A.10
Real GDPs and the Alsands cancellation: Scenario 1 (percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Canada	-0.12	-0.17	-0.20	-0.22	-0.22	-0.10	0.20	0.73	0.68
Newfoundland	0.01	0.00	-0.02	-0.04	-0.02	0.05	0.24	0.64	0.59
Prince Edward Island	0.16	0.18	0.11	0.04	0.05	0.09	0.19	0.41	0.32
Nova Scotia	0.09	0.10	0.04	-0.01	-0.00	0.05	0.22	0.56	0.48
New Brunswick	-0.01	-0.01	-0.04	-0.04	-0.03	0.04	0.26	0.66	0.59
Quebec	-0.09	-0.11	-0.11	-0.10	-0.09	-0.00	0.30	0.85	0.81
Ontario	-0.07	-0.09	-0.10	-0.13	-0.12	-0.02	0.34	1.00	0.95
Manitoba	-0.11	-0.13	-0.14	-0.10	-0.09	-0.00	0.29	0.78	0.72
Saskatchewan	-0.05	-0.05	-0.04	-0.03	-0.00	0.07	0.28	0.71	0.67
Alberta	-0.51	-0.78	-0.94	-1.06	-1.18	-0.83	-0.54	-0.21	-0.23
British Columbia	-0.11	-0.13	-0.13	-0.10	-0.08	0.01	0.29	0.76	0.69

TABLE A.11
Real GDPs and the Alsands cancellation: Scenario 2 (percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Canada	-0.16	-0.22	-0.26	-0.28	-0.30	-0.14	-0.59	-0.88	-0.70
Newfoundland	-0.09	-0.11	-0.11	-0.10	-0.10	0.02	-0.43	-0.70	-0.54
Prince Edward Island	-0.06	-0.06	-0.06	-0.04	-0.03	0.05	-0.34	-0.57	-0.44
Nova Scotia	-0.08	-0.10	-0.10	-0.09	-0.08	0.02	-0.38	-0.61	-0.47
New Brunswick	-0.09	-0.11	-0.11	-0.11	-0.10	0.01	-0.44	-0.72	-0.55
Quebec	-0.11	-0.15	-0.16	-0.16	-0.17	-0.04	-0.48	-0.75	-0.57
Ontario	-0.13	-0.17	-0.19	-0.20	-0.21	-0.06	-0.50	-0.78	-0.58
Manitoba	-0.10	-0.14	-0.15	-0.15	-0.15	-0.03	-0.45	-0.69	-0.52
Saskatchewan	-0.08	-0.09	-0.09	-0.08	-0.07	0.04	-0.40	-0.67	-0.52
Alberta	-0.49	-0.77	-0.94	-1.10	-1.24	-0.85	-1.37	-1.80	-1.57
British Columbia	-0.11	-0.14	-0.15	-0.15	-0.15	-0.01	-0.50	-0.80	-0.62

TABLE A.12
Real GDPs and the Alsands cancellation: Scenario 5 (percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Canada	-0.19	-0.34	-0.41	-0.38	-0.35	-0.15	0.30	0.84	0.77
Newfoundland	-0.05	-0.13	-0.18	-0.16	-0.11	0.03	0.34	0.75	0.67
Prince Edward Island	0.12	0.08	0.00	-0.02	0.01	0.10	0.27	0.50	0.38
Nova Scotia	0.04	-0.02	-0.10	-0.11	-0.07	0.04	0.31	0.65	0.54
New Brunswick	-0.06	-0.15	-0.20	-0.16	-0.12	0.02	0.35	0.76	0.67
Quebec	-0.15	-0.28	-0.32	-0.27	-0.23	-0.06	0.39	0.95	0.88
Ontario	-0.14	-0.29	-0.35	-0.32	-0.28	-0.09	0.44	1.11	1.03
Manitoba	-0.17	-0.29	-0.33	-0.25	-0.21	-0.05	0.38	0.87	0.79
Saskatchewan	-0.11	-0.20	-0.23	-0.16	-0.11	0.03	0.37	0.81	0.75
Alberta	-0.57	-0.92	-1.10	-1.18	-1.26	-0.83	-0.42	-0.07	-0.11
British Columbia	-0.17	-0.29	-0.32	-0.24	-0.19	-0.01	0.39	0.88	0.79

TABLE A.13

Employment and unemployment rates with the Alsands cancellation: Scenario 1

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Employment									
Canada	-0.04	-0.09	-0.10	-0.11	-0.11	-0.05	0.08	0.44	0.60
Newfoundland	0.06	0.06	0.04	0.03	0.06	0.08	0.12	0.38	0.52
Prince Edward Island	0.14	0.15	0.10	0.06	0.07	0.08	0.07	0.23	0.34
Nova Scotia	0.13	0.13	0.09	0.05	0.07	0.08	0.11	0.32	0.43
New Brunswick	0.04	0.03	0.02	0.02	0.04	0.07	0.12	0.36	0.50
Quebec	-0.01	-0.02	-0.01	0.01	0.03	0.06	0.16	0.51	0.68
Ontario	0.02	0.00	0.01	-0.00	0.02	0.05	0.19	0.63	0.80
Manitoba	-0.04	-0.05	-0.04	0.00	0.03	0.05	0.14	0.45	0.60
Saskatchewan	0.04	0.05	0.07	0.10	0.14	0.14	0.15	0.42	0.58
Alberta	-0.50	-0.81	-1.00	-1.14	-1.28	-0.96	-0.62	-0.25	-0.09
British Columbia	-0.04	-0.06	-0.04	0.01	0.05	0.08	0.15	0.45	0.59
Unemployment rates									
Canada	0.03	0.05	0.06	0.07	0.06	0.03	-0.05	-0.27	-0.36
Newfoundland	-0.01	-0.01	-0.00	-0.00	-0.01	-0.02	-0.03	-0.11	-0.15
Prince Edward Island	-0.03	-0.04	-0.02	-0.01	-0.02	-0.02	-0.02	-0.8	-0.11
Nova Scotia	-0.03	-0.03	-0.02	-0.01	-0.01	-0.02	-0.03	-0.10	-0.14
New Brunswick	-0.02	-0.01	0.00	-0.00	-0.01	-0.03	-0.05	-0.19	-0.26
Quebec	0.00	0.01	0.01	0.01	-0.00	-0.02	-0.06	-0.21	-0.29
Ontario	-0.01	0.00	0.00	0.01	-0.00	-0.03	-0.13	-0.46	-0.59
Manitoba	0.03	0.03	0.03	0.00	-0.01	-0.03	-0.08	-0.26	-0.34
Saskatchewan	-0.00	-0.00	-0.01	-0.02	-0.03	-0.03	-0.04	-0.11	-0.15
Alberta	0.26	0.42	0.51	0.58	0.65	0.48	0.31	0.11	0.02
British Columbia	0.03	0.04	0.03	-0.00	-0.02	-0.05	-0.10	-0.29	-0.39

NOTE: Figures for employment changes are percentage changes from base case; changes in unemployment rate are calculated as the scenario's rate for each year minus the base case's.

TABLE A.14

Employment and unemployment rates with the Alsands cancellation: Scenario 2

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Employment									
Canada	-0.06	-0.12	-0.14	-0.15	-0.16	-0.08	-0.24	-0.42	-0.43
Newfoundland	-0.01	-0.03	-0.03	-0.01	0.00	0.05	-0.15	-0.34	-0.36
Prince Edward Island	-0.00	-0.02	-0.02	0.00	0.02	0.05	-0.11	-0.26	-0.28
Nova Scotia	-0.01	-0.03	-0.02	-0.00	0.01	0.05	-0.11	-0.27	-0.29
New Brunswick	-0.02	-0.04	-0.04	-0.02	-0.01	0.04	-0.16	-0.35	-0.36
Quebec	-0.02	-0.04	-0.04	-0.03	-0.01	0.03	-0.14	-0.31	-0.33
Ontario	-0.03	-0.06	-0.07	-0.06	-0.04	0.01	-0.15	-0.33	-0.33
Manitoba	-0.01	-0.03	-0.03	-0.02	-0.00	0.03	-0.11	-0.26	-0.28
Saskatchewan	0.02	0.02	0.04	0.07	0.10	0.12	-0.05	-0.23	-0.27
Alberta	-0.44	-0.76	-0.96	-1.16	-1.31	-0.97	-1.04	-1.21	-1.18
British Columbia	-0.02	-0.04	-0.03	-0.01	0.01	0.06	-0.17	-0.38	-0.40
Unemployment rates									
Canada	0.04	0.07	0.08	0.09	0.09	0.05	0.15	0.26	0.26
Newfoundland	0.01	0.01	0.02	0.01	0.01	-0.01	0.05	0.11	0.11
Prince Edward Island	0.00	0.01	0.01	0.00	-0.00	-0.01	0.04	0.09	0.09
Nova Scotia	0.01	0.01	0.02	0.01	0.01	-0.01	0.05	0.10	0.11
New Brunswick	0.01	0.02	0.03	0.02	0.01	-0.01	0.09	0.19	0.20
Quebec	0.01	0.02	0.03	0.02	0.02	-0.00	0.07	0.16	0.17
Ontario	0.02	0.05	0.06	0.05	0.04	0.00	0.13	0.27	0.27
Manitoba	0.01	0.02	0.02	0.01	0.01	-0.02	0.07	0.16	0.16
Saskatchewan	-0.00	-0.00	-0.00	-0.01	-0.02	-0.02	-0.02	0.07	0.08
Alberta	0.22	0.38	0.49	0.59	0.67	0.49	0.53	0.63	0.61
British Columbia	0.01	0.03	0.03	0.01	-0.00	-0.04	0.12	0.26	0.27

NOTE: See note to Table A.13.

TABLE A.15
Employment and unemployment rates with the Alsands cancellation: Scenario 5

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Employment									
Canada	-0.07	-0.17	-0.24	-0.23	-0.19	-0.09	0.14	0.55	0.70
Newfoundland	0.05	-0.01	-0.06	-0.05	0.00	0.06	0.19	0.49	0.62
Prince Edward Island	0.13	0.11	0.03	0.00	0.04	0.07	0.12	0.31	0.41
Nova Scotia	0.12	0.08	0.00	-0.02	0.03	0.07	0.16	0.41	0.51
New Brunswick	0.03	-0.03	-0.09	-0.06	-0.01	0.05	0.18	0.47	0.59
Quebec	-0.03	-0.11	-0.15	-0.11	-0.06	0.01	0.21	0.61	0.76
Ontario	-0.01	-0.10	-0.16	-0.15	-0.09	-0.02	0.24	0.73	0.88
Manitoba	-0.06	-0.13	-0.16	-0.10	-0.04	0.01	0.19	0.54	0.68
Saskatchewan	0.02	-0.02	-0.05	0.00	0.08	0.11	0.21	0.52	0.67
Alberta	-0.51	-0.88	-1.10	-1.21	-1.32	-0.95	-0.52	-0.10	0.05
British Columbia	-0.06	-0.13	-0.16	-0.08	-0.01	0.06	0.23	0.57	0.70
Unemployment rates									
Canada	0.04	0.10	0.14	0.14	0.11	0.05	-0.08	-0.33	-0.42
Newfoundland	-0.01	0.01	0.03	0.02	0.01	-0.01	-0.05	-0.14	-0.18
Prince Edward Island	-0.03	-0.03	-0.00	0.00	-0.01	-0.02	-0.04	-0.11	-0.13
Nova Scotia	-0.03	-0.02	0.01	0.02	0.00	-0.01	-0.05	-0.13	-0.17
New Brunswick	-0.01	0.02	0.05	0.04	0.01	-0.02	-0.09	-0.24	-0.31
Quebec	0.01	0.05	0.07	0.06	0.04	0.01	-0.18	-0.26	-0.33
Ontario	0.01	0.08	0.12	0.12	0.08	0.02	-0.17	-0.54	-0.66
Manitoba	0.04	0.07	0.10	0.06	0.03	-0.01	-0.11	-0.31	-0.38
Saskatchewan	0.00	0.01	0.02	0.01	-0.01	-0.02	-0.05	-0.14	-0.18
Alberta	0.27	0.45	0.56	0.62	0.67	0.48	0.26	0.03	-0.05
British Columbia	0.05	0.09	0.11	0.06	0.01	-0.04	-0.15	-0.38	-0.46

NOTE: See note to Table A.13.

TABLE A.16
The early effects of the Alsands cancellation on provinces' real GDPs: a comparison of Scenarios 1 and 4 (percentage changes from base case)

	1982		1985	
	Scenario 1	Scenario 4	Scenario 1	Scenario 4
Newfoundland	0.01	-0.06	-0.04	-0.04
Prince Edward Island	0.16	-0.03	0.04	0.0
Nova Scotia	0.09	-0.05	-0.01	-0.04
New Brunswick	-0.01	-0.06	-0.04	-0.05
Quebec	-0.09	-0.08	-0.10	-0.10
Ontario	-0.07	-0.09	-0.13	-0.12
Manitoba	-0.11	-0.07	-0.10	-0.08
Saskatchewan	-0.05	-0.05	-0.03	-0.02
Alberta	-0.51	-0.45	-1.06	-1.04
British Columbia	-0.11	-0.08	-0.10	-0.08

per cent for Ontario in 1984 under Scenario 5.[14]

The cancellation also has effects on employment and the unemployment rate. In Scenario 1, virtually all of this impact is concentrated in Alberta, where employment falls by more than 1 per cent in 1984-6 and the unemployment rate rises by more than 0.5 per cent. The latter effect might, of course, be mitigated by interprovincial migration - the cancellation of Alsands jobs probably means less migration to Alberta - but fewer workers moving there would also entail higher unemployment rates in other provinces.[15]

Interestingly, in Scenario 1 employment effects are marginally positive in all provinces but Alberta by 1986. It would be prudent, however, to discount this finding. It results from the model's implicit assumptions that the labour market is an aggregate and that an upturn in unemployment and a downturn in activity lowers wages and induces 'labour hoarding' in all sectors and regions. No doubt a certain amount of crossregional and cross-sectoral labour-market integration exists, but the model probably overstates it. Thus,

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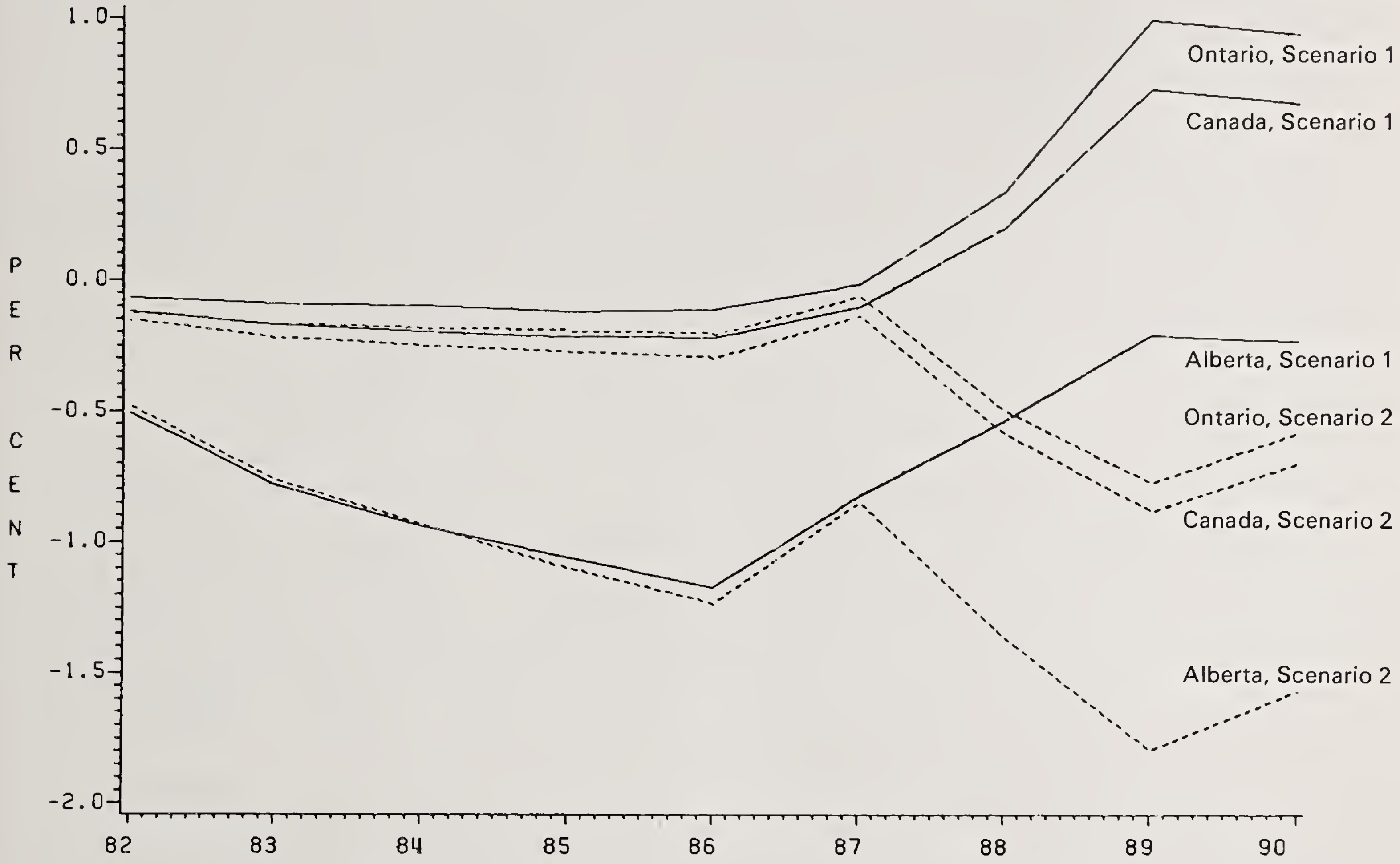
[14] Under Scenario 4 additional depreciation offsets the additional reduction in domestic demand caused by the cancellation. This affects Ontario's GDP in 1982-4, since more of the cancelled machinery and equipment would have been bought in Ontario. However, by 1985 additional depreciation stimulates Ontario's export and import-competing sectors, offsetting the lost orders from Alsands.

[15] Recall that interprovincial migration is not endogenous to the PRISM model and is not included in the assumptions for this experiment.

Figure A.4
Real growth and the Alsands cancellation
(percentage changes from base case)

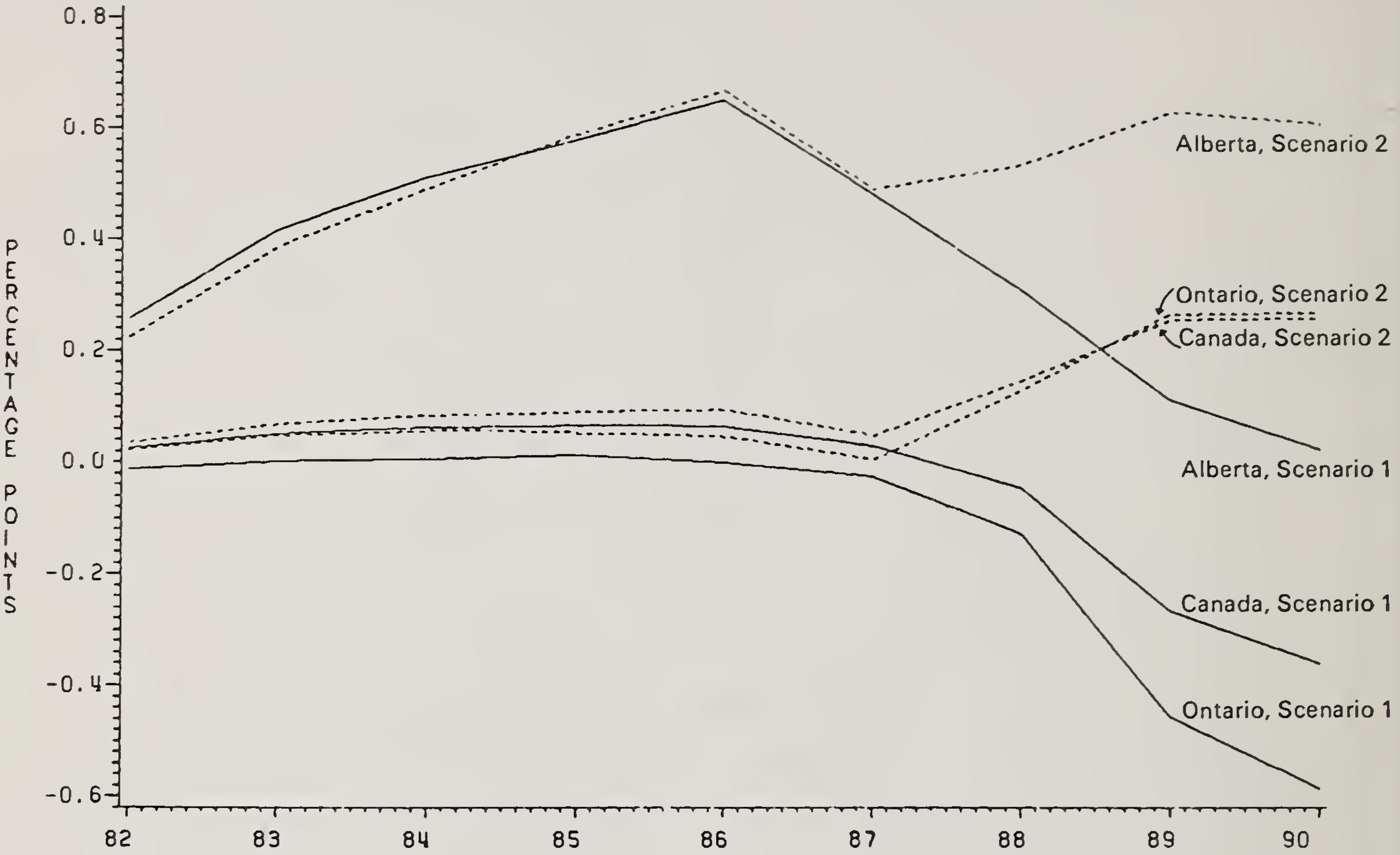


the results for Alberta's employment and unemployment are probably too high and the other provinces' too low. Nonetheless, even allowing for such adjustments, these effects are not large in Scenario 1. Scenario 5 brings considerably worse impacts to employment in provinces other than Alberta, especially to Ontario.

The small positive impacts of the cancellation on some of the Atlantic provinces and the territories are something of a puzzle. The loss of the project has little negative impact here; the positive stimuli come from increases in their tertiary-sector shares. What the PRISM equations are suggesting, in an imprecise way, is that the Alsands cancellation leads to somewhat less migration from the Atlantic provinces to the West, and hence to less than the base case's reduction in the service sectors in these provinces.[16] Note, however, that in the severe Scenario 5, the results for all

[16] Interprovincial migration is not currently endogenous in PRISM, and these

Figure A.5
Unemployment rates and the Alsands cancellation
(changes from base case)



provinces are negative, even in 1982. A more important point, however, is that during the construction phase, the effects of the Alsands cancellation on the Atlantic provinces are relatively small in all the scenarios.

Production phase (1988-90)

In the provincial cases, as in the national, exchange-rate assumptions dominate the outcomes for the production phase. If the exchange rate is permitted to fall in response to additional oil importing (Scenario 1), GDPs rise above base-case levels in all provinces except Alberta. The biggest increases are in Ontario, whose exporting and import-competing sectors benefit from the depreciation of the dollar; by 1989-90, the rise is about 1 per cent of GDP. Behind Ontario come Quebec, Manitoba, and B.C., in that

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experiments assumed no response in migration. To some extent, however, the service-sector-share equations indirectly mimic migration effects.

order. By this time, Alberta's GDP recovers from the reduced level of the construction phase and benefits from the depreciation of the dollar. But, of course, Alberta now suffers a GDP loss in the reduced output of its mineral fuels sector. Moreover, the tertiary sectors, which take several years to adjust downwards in response to the construction cancellation, also take several years to adjust upwards when the Alberta economy begins to recover via the depreciation of the dollar.

The alternative to a depreciation of the dollar is monetary restriction (Scenario 2). It affects all types of expenditure but particularly investment, which is projected - even without Alsands - to be concentrated especially in Alberta. Late in the decade, the dual impact of reductions in mineral fuels and in investment pushes the Alberta economy even further below the base case than at any point in the construction phase (the extreme is a loss of 1.8 per cent in 1989). Since B.C. is also projected as an area of heavy investment late in the decade, high interest rates affect it more seriously than any province except Alberta. However, the differences among the provinces (except Alberta) are not large, especially in 1990 when indirect effects begin to accumulate.

CONCLUSION

Our experiments suggest that, considered in itself and in its construction phase, the cancellation of the Alsands project is not a disaster for the Canadian economy, although in the absence of alternative expenditures and in a period of slack, it is still a loss. For the construction phase the greatest danger may be posed by psychological aftershocks affecting confidence and expectations, but these are the kind of effects on which macromodels must be mute. Alternative scenarios demonstrate the importance of assumptions about what would have been the relative pricing, the exchange-rate flexibility, and the extent of foreign borrowing. The import content the project would have had seems less important - at least for the Canada-wide picture - because of possible offsetting movements in the exchange rate.

A greater danger to the Canadian economy threatens in the period after 1987 when Alsands oil fails to appear. As Scenarios 1 and 2 demonstrate, policy choices determine whether the loss of oil is translated into increased inflation and depreciation of the dollar, with a boost to real growth, or into loss of real output to maintain a fixed exchange rate. Of course, a mixed policy could leave the result somewhere in the middle.

For the provinces, the results offer few surprises. During the construction phase, Alberta is hurt the worst - but the other provinces also suffer. For all the provinces, the effects, positive and negative, of the 'lost' oil in the later 1980s are of greater magnitude than the earlier effects of cancellation of the construction phase.

TABLE A.17
The Ontario economy and the Alsands cancellation: Scenario 1 (percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Provincial gross domestic product	-0.10	-0.13	-0.16	-0.18	-0.15	-0.06	0.93	2.60	3.39
Real provincial GDP at factor cost	-0.07	-0.09	-0.10	-0.13	-0.12	-0.02	0.34	1.00	0.95
Deflator, provincial GDP at factor cost	-0.03	-0.04	-0.05	-0.04	-0.02	-0.03	0.61	1.69	2.56
Annual wages & salaries per employee	-0.04	-0.05	-0.08	-0.10	-0.10	-0.11	0.38	1.36	2.32
GDP at factor cost per employee	-0.09	-0.10	-0.11	-0.12	-0.14	-0.07	0.15	0.36	0.15
Labour force	0.01	0.01	0.01	0.01	0.02	0.02	0.05	0.15	0.18
Employment	0.02	0.00	0.01	-0.00	0.02	0.05	0.19	0.63	0.80
Unemployment rate (%)*	-0.01	0.00	0.00	0.01	-0.00	-0.03	-0.13	-0.46	-0.59
Real domestic product - manufacturing	-0.17	-0.21	-0.25	-0.28	-0.28	-0.10	0.58	2.04	2.01
RDP - goods-producing industries	-0.12	-0.15	-0.17	-0.18	-0.16	-0.02	0.49	1.62	1.60
RDP - service industries	-0.05	-0.08	-0.09	-0.12	-0.12	-0.04	0.31	0.79	0.73

NOTE: See note to Table A.2.

TABLE A.18
The Ontario economy and the Alsands cancellation: Scenario 2 (percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Provincial gross domestic product	-0.14	-0.21	-0.26	-0.28	-0.31	-0.16	-0.69	-0.94	-0.71
Real provincial GDP at factor cost	-0.13	-0.17	-0.19	-0.20	-0.21	-0.06	-0.50	-0.78	-0.58
Deflator, provincial GDP at factor cost	-0.02	-0.04	-0.07	-0.09	-0.10	-0.09	-0.25	-0.25	-0.18
Annual wages & salaries per employee	-0.01	-0.05	-0.09	-0.13	-0.17	-0.18	-0.31	-0.44	-0.38
GDP at factor cost per employee	-0.10	-0.12	-0.13	-0.14	-0.17	-0.07	-0.35	-0.45	-0.25
Labour force	-0.00	-0.01	-0.01	-0.00	0.00	0.01	-0.02	-0.05	-0.05
Employment	-0.03	-0.06	-0.07	-0.06	-0.04	0.01	-0.15	-0.33	-0.33
Unemployment rate (%)*	0.02	0.05	0.06	0.05	0.04	0.00	0.13	0.27	0.27
Real domestic product - manufacturing	-0.22	-0.31	-0.35	-0.38	-0.41	-0.17	-0.64	-1.00	-0.70
RDP - goods-producing industries	-0.18	-0.24	-0.26	-0.27	-0.28	-0.08	-0.69	-1.12	-0.83
RDP - service industries	-0.12	-0.16	-0.18	-0.19	-0.21	-0.08	-0.47	-0.69	-0.53

* See note to Table A.2.

TABLE A.19
The Ontario economy and the Alsands cancellation: Scenario 5 (percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Provincial gross domestic product	-0.22	-0.51	-0.71	-0.76	-0.78	-0.53	0.75	2.52	3.42
Real provincial GDP at factor cost	-0.14	-0.29	-0.35	-0.32	-0.28	-0.09	0.44	1.11	1.03
Deflator, provincial GDP at factor cost	-0.09	-0.24	-0.39	-0.48	-0.54	-0.47	0.31	1.49	2.51
Annual wages & salaries per employee	-0.09	-0.21	-0.36	-0.48	-0.55	-0.52	0.08	1.19	2.28
GDP at factor cost per employee	-0.13	-0.19	-0.19	-0.17	-0.18	-0.07	0.20	0.37	0.14
Labour force	-0.00	-0.02	-0.03	-0.02	-0.01	0.00	0.06	0.17	0.19
Employment	-0.01	-0.10	-0.16	-0.15	-0.09	-0.02	0.24	0.73	0.88
Unemployment rate (%)*	0.01	0.08	0.12	0.12	0.08	0.02	-0.17	-0.54	-0.66
Real domestic product - manufacturing	-0.28	-0.57	-0.71	-0.64	-0.57	-0.26	0.78	2.24	2.12
RDP - goods-producing industries	-0.22	-0.45	-0.56	-0.48	-0.40	-0.13	0.68	1.82	1.73
RDP - service industries	-0.12	-0.24	-0.28	-0.28	-0.26	-0.09	0.37	0.87	0.80

* See note to Table A.2.

TABLE A.20
The Alberta economy and the Alsands cancellation: Scenario 1 (percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Provincial gross domestic product	-0.34	-0.53	-0.64	-0.75	-0.84	-0.58	-1.26	-1.60	-0.95
Real provincial GDP at factor cost	-0.51	-0.78	-0.94	-1.06	-1.18	-0.83	-0.54	-0.21	-0.23
Deflator, provincial GDP at factor cost	0.17	0.26	0.30	0.32	0.35	0.26	-0.71	-1.33	-0.65
Annual wages & salaries per employee	0.01	0.01	-0.00	-0.03	-0.03	-0.00	0.18	0.80	1.76
GDP at factor cost per employee	-0.01	0.03	0.06	0.08	0.11	0.13	0.08	0.04	-0.14
Labour force	-0.23	-0.38	-0.47	-0.54	-0.61	-0.46	-0.30	-0.14	-0.06
Employment	-0.50	-0.81	-1.00	-1.14	-1.28	-0.96	-0.62	-0.25	-0.09
Unemployment rate (%)*	0.26	0.42	0.51	0.58	0.65	0.48	0.31	0.11	0.02
Real domestic product - manufacturing	-0.39	-0.55	-0.65	-0.73	-0.78	-0.45	0.27	1.48	1.49
RDP - goods-producing industries	-0.90	-1.37	-1.60	-1.81	-1.96	-1.22	-0.90	-0.62	-0.58
RDP - service industries	-0.23	-0.35	-0.45	-0.51	-0.59	-0.51	-0.17	0.29	0.22

* See note to Table A.2.

TABLE A.21
The Alberta economy and the Alsands cancellation: Scenario 2 (percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Provincial gross domestic product	-0.36	-0.56	-0.70	-0.85	-0.97	-0.69	-2.40	-3.95	-3.72
Real provincial GDP at factor cost	-0.49	-0.77	-0.94	-1.10	-1.24	-0.85	-1.37	-1.80	-1.57
Deflator, provincial GDP at factor cost	0.12	0.20	0.24	0.25	0.27	0.17	-1.08	-2.23	-2.20
Annual wages & salaries per employee	-0.05	-0.08	-0.11	-0.15	-0.18	-0.16	-0.50	-0.87	-0.81
GDP at factor cost per employee	-0.04	-0.01	0.02	0.05	0.08	0.13	-0.33	-0.59	-0.40
Labour force	-0.21	-0.36	-0.46	-0.55	-0.62	-0.47	-0.49	-0.56	-0.55
Employment	-0.44	-0.76	-0.96	-1.16	-1.31	-0.97	-1.04	-1.21	-1.18
Unemployment rate (%)*	0.22	0.38	0.49	0.59	0.67	0.49	0.53	0.63	0.61
Real domestic product - manufacturing	-0.43	-0.63	-0.73	-0.82	-0.89	-0.51	-0.80	-1.02	-0.76
RDP - goods-producing industries	-0.94	-1.43	-1.66	-1.88	-2.05	-1.26	-2.00	-2.71	-2.38
RDP - service industries	-0.17	-0.30	-0.41	-0.54	-0.64	-0.53	-0.94	-1.18	-1.01

* See note to Table A.2.

TABLE A.22
The Alberta economy and the Alsands cancellation: Scenario 5 (percentage changes from base case)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Provincial gross domestic product	-0.40	-0.73	-0.95	-1.09	-1.21	-0.86	-1.37	-1.63	-0.90
Real provincial GDP at factor cost	-0.57	-0.92	-1.10	-1.18	-1.26	-0.83	-0.42	-0.07	-0.11
Deflator, provincial GDP at factor cost	0.15	0.18	0.14	0.07	0.04	-0.04	-0.95	-1.50	-0.72
Annual wages & salaries per employee	-0.03	-0.13	-0.25	-0.39	-0.47	-0.41	-0.13	0.62	1.72
GDP at factor cost per employee	-0.05	-0.05	-0.00	0.04	0.06	0.12	0.11	0.03	-0.17
Labour force	-0.24	-0.41	-0.52	-0.58	-0.63	-0.46	-0.26	-0.07	0.00
Employment	-0.51	-0.88	-1.10	-1.21	-1.32	-0.95	-0.52	-0.10	0.05
Unemployment rate (%)*	0.27	0.45	0.56	0.62	0.67	0.48	0.26	0.03	-0.05
Real domestic product - manufacturing	-0.48	-0.84	-1.02	-1.02	-1.02	-0.58	0.43	1.65	1.59
RDP - goods-producing industries	-0.96	-1.53	-1.80	-1.95	-2.06	-1.21	-0.73	-0.43	-0.41
RDP - service industries	-0.29	-0.51	-0.63	-0.64	-0.69	-0.53	-0.07	0.39	0.32

* See note to Table A.2.

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